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AVIATION

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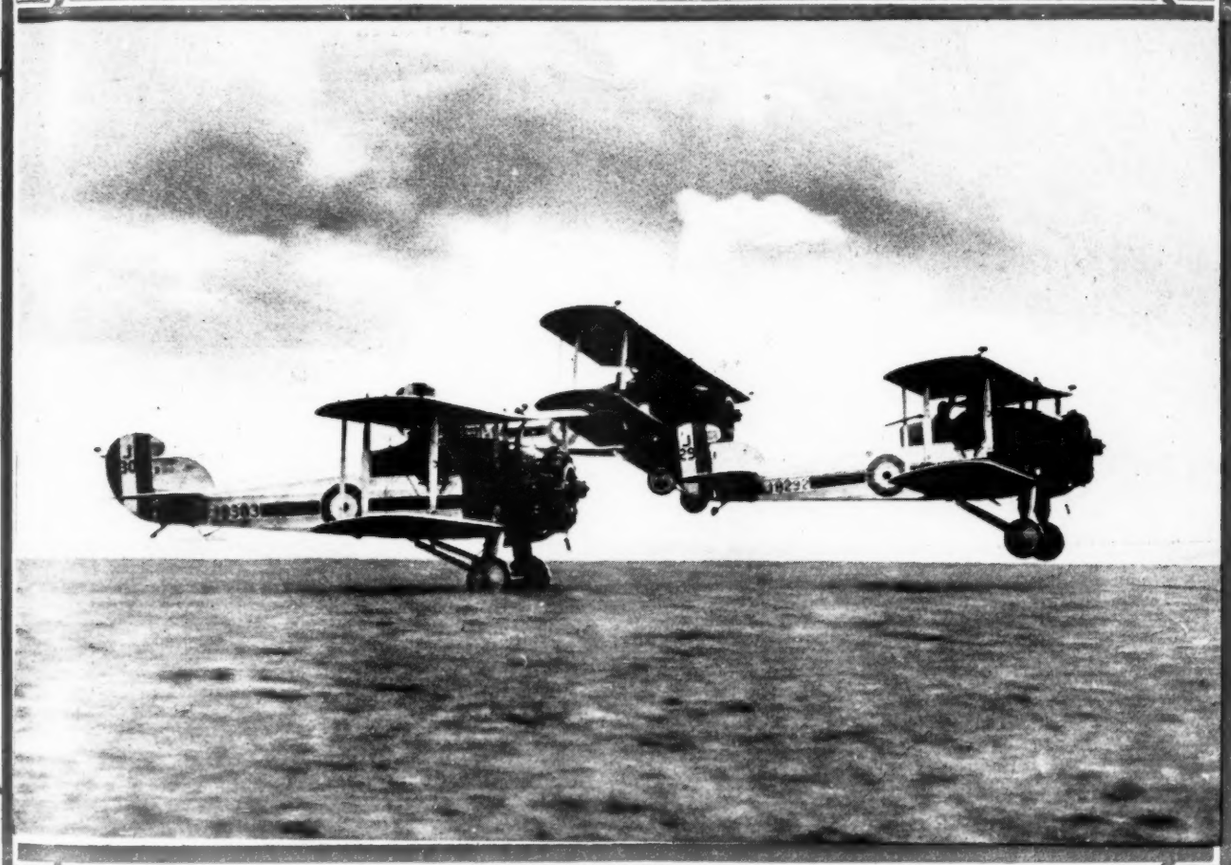

Three British scouts taking off in wingtip formation

VOLUME XXIII

NUMBER 24

Special Features

The Curtiss Attack Plane
The Fourth Congress Of Aerial Navigation
Aerial Photography and Its Relation to Hydrography

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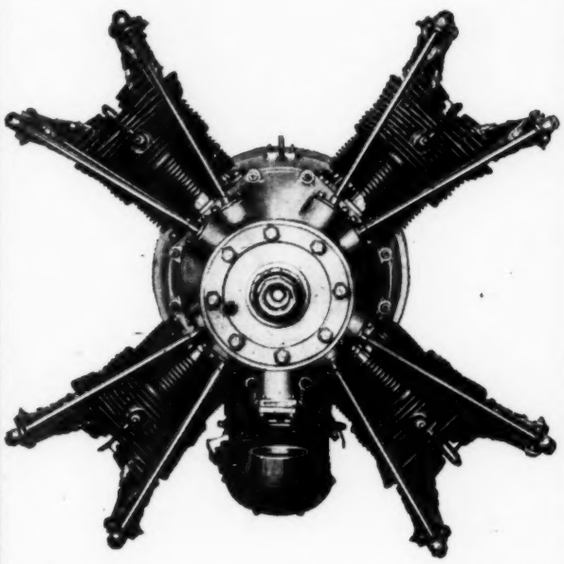

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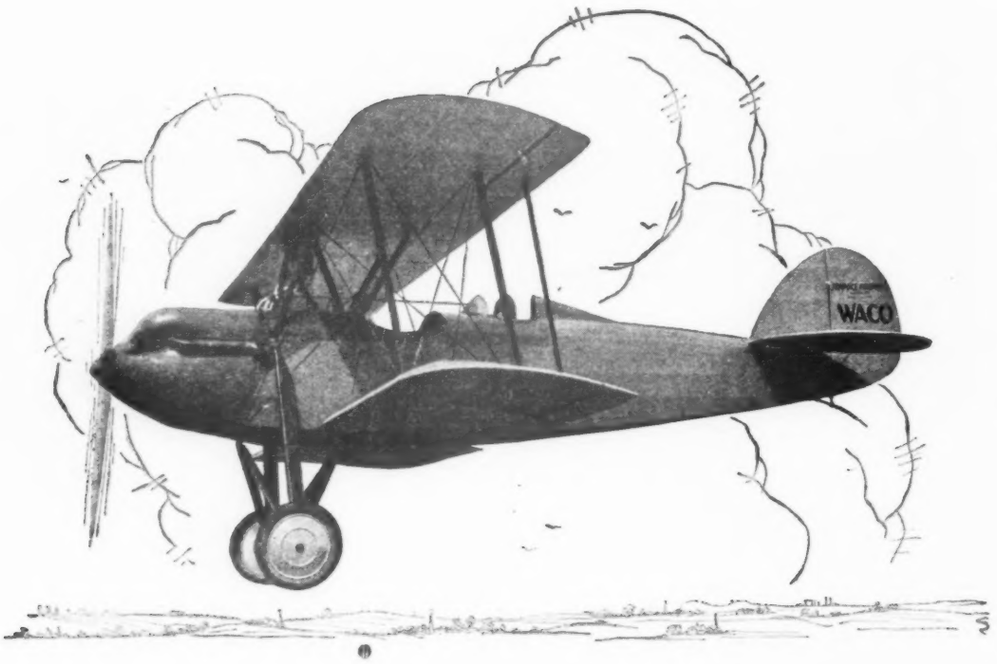

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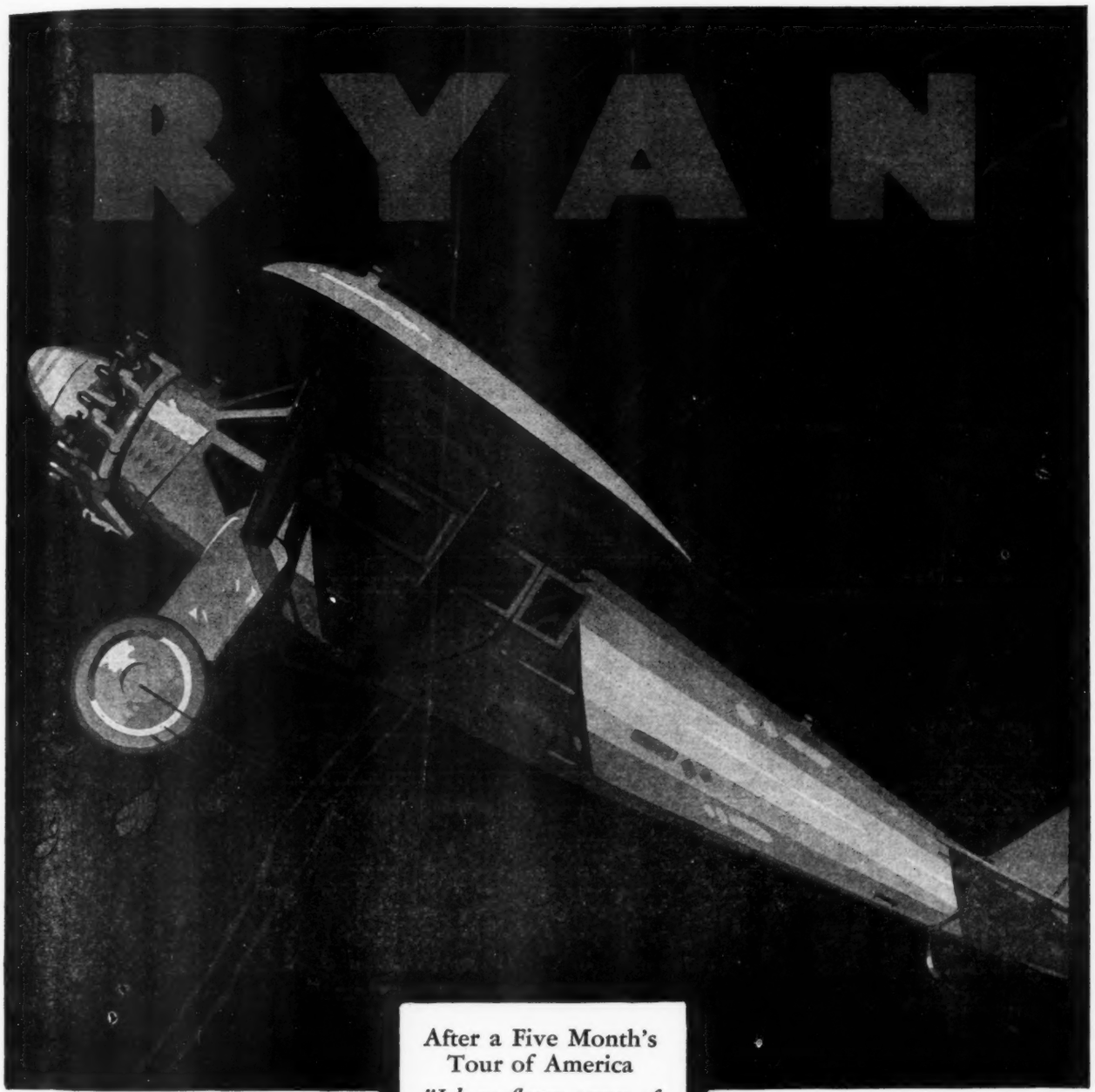

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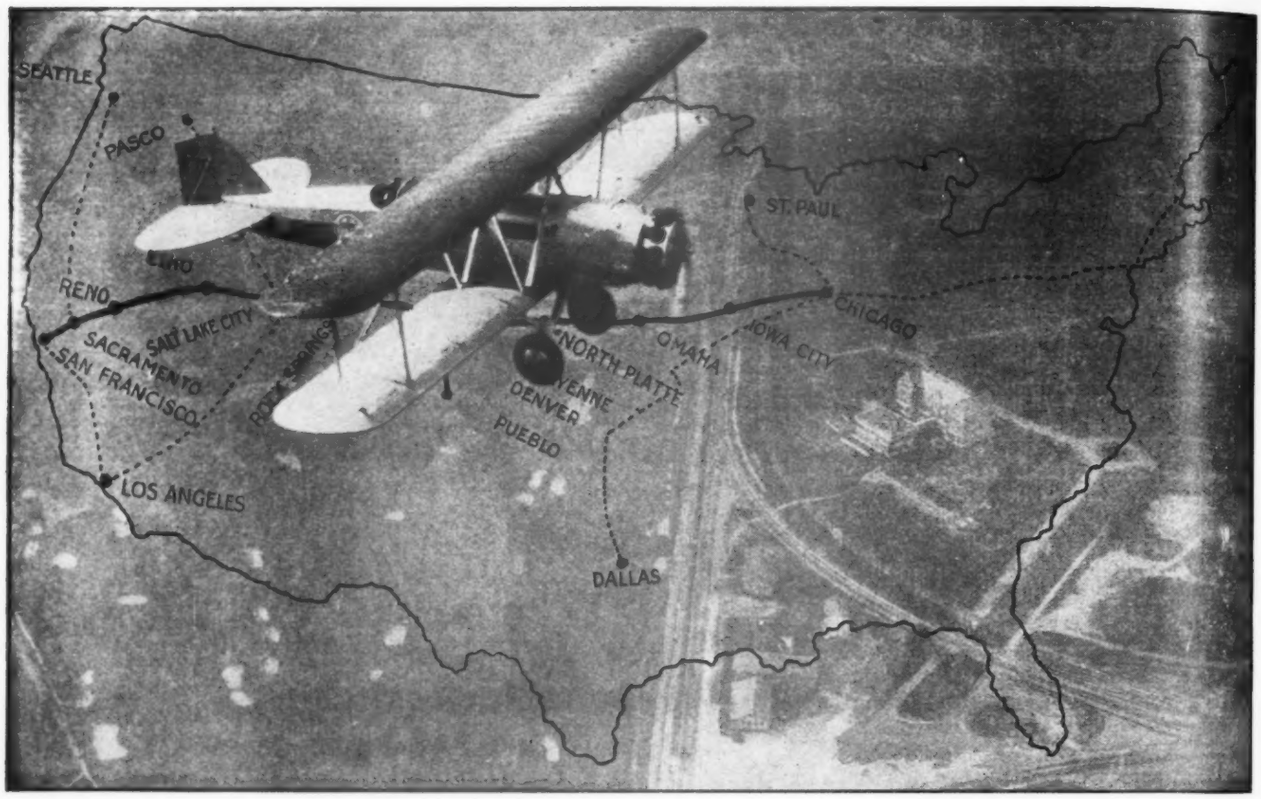

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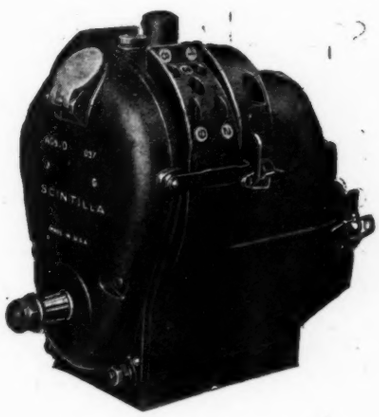

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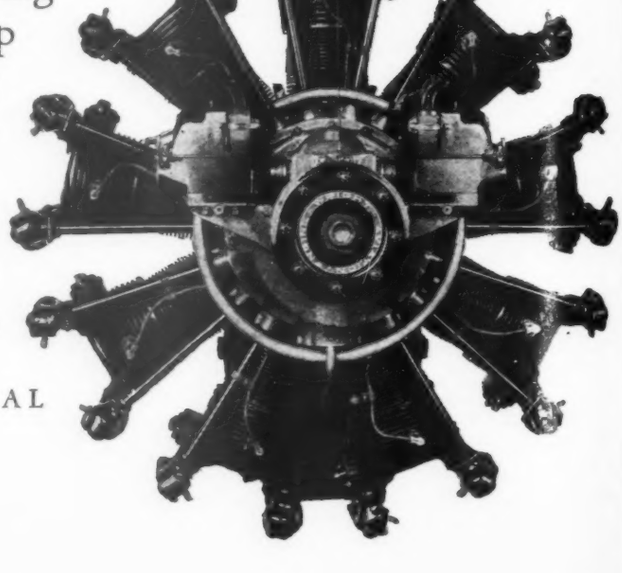

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Aerial Weather Reports

ONE OF the most pressing problems which will have to be solved in connection with air navigation is how to secure adequate appropriations for the Weather Bureau for aeronautical observations. The Weather Bureau is under the Department of Agriculture which has been mainly concerned with the welfare and safety of the farmer and seamen. Now it will be responsible for the reports upon which airmen will have to rely for any knowledge of weather conditions along routes on which they intend to fly.

Heretofore, surface conditions have been all that have been necessary to observe for satisfactory weather predictions. With the extension of air lines and the coming overseas services an entirely new condition will have to be met. The wind velocity and direction at various altitudes will have to be scientifically checked. All observations will have to be collected and predictions made and distributed within a very few hours to make them worth while. All of which will require increased appropriations and enlarged service.

No greater service can be rendered to the advance of aviation than to have the Weather Bureau adequately provided with funds for aerial weather reports. Everyone with any interest in aeronautics should lend his support to securing the aid that will be necessary for this invaluable service.

Why Argue?

RELATIVE TO the controversy on the superiority of air-cooled or water-cooled engines it would seem that rather than it being a case of which was the best engine, it was which engine was best suited for a particular type of work.

During the latter part of the World War certain types of aircraft were developed for certain styles of aerial offense and defense. And although in a future conflict, the air services may operate on an improved basis, such as, massed formation attack, and closer contact and cooperation with the ground forces, etc., the objective will be the same, namely, the destruction of the enemy.

Such being true it is only logical that a pursuit plane that has to engage the enemy at high altitude should be equipped with an engine that will give it the greatest amount of maneuverability at that height. And, on the other hand, an attack plane that is engaged in ground strafing, etc. should be powered by an engine that will give it the maximum amount of dive and sea level speed possible.

When an engine is designed to incorporate all of such desired features, then will be the time to consider complete standardization. But no such aircraft power plant exists today and the research and development of air cooled and water cooled engines has by no means become exhausted. Nor has the perfection of either one reached the point that warrants it being standard equipment in all aircraft. Time may prove that one type of engine's present superiority in a particular phase of performance is only so because of that feature not having been fully developed in the other engine.

And so, in the final analysis, why argue? Let Army, Navy and civilian engineers concentrate on the development of their respective engine designs. Competition may lead to perfection. But rather than consider that perfection means the standardization of the best engine, consider that it means the engine best suited for the work to be performed, regardless of its detail design.

Must We Hibernate?

ONE OF our enterprising contemporaries with keen enthusiasm claims that the West is America's one big market for aircraft and aircraft supplies during the winter season. It states that during this period flying west of the Rockies goes on just as briskly as in summer months while the rest of the country stays on the ground because of stormy weather. It is quite human and understandable to wax eloquent over climatic advantages, but to call west of the Rockies "the one big" aeronautical market for a large part of the year will stir other aviation centers where flying is thought of in national rather than in sectional terms.

Fortunately for other aircraft publications who have not the advantage of basking under perpetual sunshine, advertisers of aircraft and aircraft supplies, their pilots and salesmen, are a well traveled clan and know their markets. AVIATION would be the last to deny the supreme advantage of the southern California climate for year 'round flying. But it rises to mildly protest at the idea that the rest of the country folds its wings and hibernates —aeronautically speaking—for six months of the year. Witness the mail routes with 95 per cent, or greater performance averages the year 'round. Ask the commercial operators of Curtiss Field, Long Island, and the 1st Pursuit Group at Mt. Clemens, Mich. Will Kansas, Florida or other states, either within or outside the cold belt east of the Rockies please testify?

We'll admit a partiality for flying in pleasant sunshine. But if it's only a fair weather game deluded fliers, manufacturers, and operators and backers had better begin now to salvage some of their sizeable investments made on the theory that flying is a new form of transportation which functions at a fair average in all kinds of weather.

Aerial Photography *and* Its Relation *to* Hydrography

By LIEUT. LOGAN C. RAMSEY, U.S.N.

Recently officer in charge of the Section of Aerial Navigation of the Navy Department and a member of the Federal Board of Surveys and Maps.

THE AVIATION world is more or less familiar with the methods and applications of aerial photography in general. The work of the Army Air Corps and the Naval Aviation Service for the topographic mapping projects of the Geological Survey and other governmental map making agencies in the United States and Alaska as well, has been given considerable publicity. The projects so successfully completed by various commercial firms involving city, tax, cadastral, power transmission line, and other types of surveys, together with the other thousand and one uses to which aerial photo-mapping may be put, hardly need explanation or exploitation. But the use to which aerial photographs are put in producing charts for the mariner and which result in a product of superior quality at a distinct saving over the cost of the charts produced by the old methods is not so well known or understood.

There are certain essential differences both in methods and in application of the photographs in producing maps for the landsman and charts for the mariner. An examination of these differences may be of interest together with an explanation of how the world's newest adventurer—the aviator—aids the world's oldest pioneer—the seaman.

In the first place the belief is quite prevalent that the words "map" and "chart" are synonymous. In a certain non-technical sense this is true, but when the techniques of compilation and construction, and uses to which the finished products are put, are examined the differences become marked. There are, roughly speaking, hundreds of different types of maps; so an exact definition would puzzle the most expert lexicographer. However a map may be loosely defined as a deliniation of a definite area of land, certain features of which are depicted; the selection of the feature to be shown depending upon the purpose for which the map is intended. For example, on soil maps the chemical constituents of the soil is the main feature; on road maps, the highways; while on topographic maps the drainage, the relief, prominent landmarks, the railroads, the highways and other features are shown.

On the other hand, there are at present, from the cartographer's point of view, only two important classes of charts—one for maritime navigation and the other for the navigation of the air. That for the aviator is designed primarily for aerial navigation in seaplanes or amphibians so in both cases the hydrography is of the greatest importance. So we can give a very exact definition of the word "chart". A chart, to quote the official definition given the Federal Board of Surveys and Maps by the Hydrographic Office of the Navy Department, is a deliniation drawn to a definite scale on a mathematical scheme of projection, of a definite portion of the navigable waters of the earth together with the adjacent features of the land and hazards to aerial and maritime navigation particularly in the near approaches to the

A mosaic map of Alexandria, Egypt, made from pictures taken from an altitude of 10,000 ft.

land. Thus the essential difference between a map and a chart is that the first is essentially a deliniation of the land while the latter depicts the water.

With this difference in mind it is obvious that in a map and a chart both covering areas of the same size that the amount of land shown on the chart will be less than that shown on the map. Aerial photographs of all-water areas having proven of little if any value, fewer photographs will be required in the making of a chart than is the case with a map—other factors being equal. For quite a while the belief was held that photographs of the water areas, particularly where wire drags had not been used, would be of great value in disclosing the presence or absence of submarine dangers such as pinnacle rocks, small shoals etc., that might be missed by the sounding party of a hydrographic survey.

(Acme)

An aerial view of a section of Pittsfield, Mass., taken during the recent flood.

Unfortunately this theory proved to be based upon faulty premises. In the first place such dangers appeared in the photographs only where the water was exceptionally clear. As such conditions were found to obtain but rarely near important harbors where the need for detailed hydrographic charts is greatest, the possibilities of this particular application of aerial photography are obviously very limited. And even in localities where the clarity of the water was sufficient, it was found extremely difficult to distinguish between the real dangers and mere discolorations of the bottom as both showed up about the same in pictures. In addition, with few or no reference points, the difficulty of locating and orienting adjacent photographs was found almost insurmountable. Thus aerial photography cannot replace the sonic depth finder, sounding parties, and the wire drag in aiding bathemetrically the development of the hydrography. Such photographs are rarely taken even for experimental purposes.

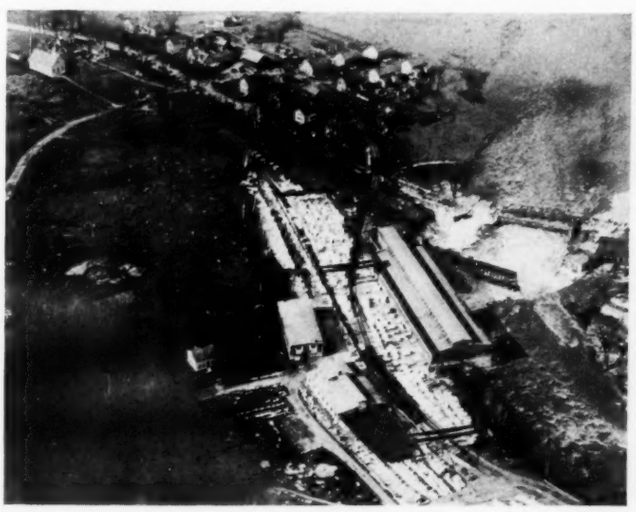
Connection Definitely Established

This is, however, the dark side of a silver-lined cloud, as the value of aerial photo-mapping in connection with hydrographic surveys has been definitely established. All surveys made during the past three years by the Hydrographic Office of the Navy have involved the utilization of aircraft both technically for aerial photo-mapping and logistically for the expedition of the date of completion. The Coast and Geodedic Survey, which charts the coasts of the United States, (the Hydrographic Office fulfilling the same function for the rest of the world), has a definite policy which calls for the utilization of aerial photographs in chart making wherever the necessary pictures are available. That foreign governments take the same attitude is evidenced by the request of the International Hydrographic Bureau at Manaco to all subscribing nations for information concerning methods of taking aerial photographs and utilizing them in the production of hydrographic charts. The reply of the United States was a report by the author of this article which has been published in the PROCEEDINGS OF THE NAVAL INSTITUTE for July, 1927, and in the UNITED STATES DAILY of July 9, 1927. Reports of surveys from all over the world are significant in that the use of aerial photographs is almost invariably mentioned. Excellent results must have been obtained to justify such universal usage. The value of the photographs being admitted, next comes the question of methods used in taking the pictures and in their application.

In taking photographs for maps designed for most of the more common uses such as topographic, cadastral, transmission line, and military maps, the individual pictures are generally taken while the plane is flying along a steady course. These photographs, taken on a single flight, will, when correctly arranged, give the details for a long and narrow but generally rectangular, strip. On the other hand, in making hydrographic charts, the coast line, which is the most important feature to be photographed, can only seldom be photographed by a straight line flight. While the general trend of the coast line in many parts of the world is very regular, usually these areas are not those requiring the more detailed charts; as both for naval and commercial purposes the coast line is of minor importance unless breaks occur such as bays, rivers, etc., that afford shelter for the ships and facilitate communication between ship and shore.

Must Fly a Straight Course

Thus the pilot of a mapping plane engaged in taking aerial photographs may and must steer a straight course, making due allowance for any areas covered on flights over adjacent territory. Such lapses are apt to be very costly as they are rarely discovered until after the negatives have been developed, prints made and examined. It is not at all unheard of for a survey party to be completely disbanded prior to such a discovery which, if the "holiday" is of any importance, sometimes necessitates the sending of a new party into the field the following season for the sole purpose of photographing the area sighted. In mapping this was of more frequent occurrence prior to the development of the multi-lens camera than it is apt to be in the future as the error will have to be quite pronounced to cause a lapse between the limits covered by the lateral lenses on two adjacent photographic strips.



(Acme)

Looking down on a part of Rutland, Vt., during the recent flood. Note bridge at right.

But if the pilot of the mapping plane must exercise care, his fellow engaged in the production of a chart must be doubly on the alert. He cannot estimate the drift on a definite heading and fix his attention on maintaining a steady course and altitude. He must not only follow a course with frequent changes but he must make allowance for the change in drift due to the different angle at which the force of the wind deflects him from the course steered by compass. If

the wind aloft is not strong his problem is not so difficult, but unfortunately this is rarely the case at photographic altitudes which are generally around ten thousand feet. And incidentally the pilot cannot hope for any reduction in the number of his errors by the use of multi-lensed cameras, as in hydrographic surveys, where the coast line is the only feature photographed, its width is so small as to render the use of the multi-lens camera uneconomical.

The photographer in a charting plane must also take these changing courses into consideration, together with the winds prevailing at the time in making his camera settings. Consider an actual instance, recently occurring during the progress of a survey made recently by the Hydrographic Office.

(Acme)

An air view of a section of the outlying districts of Pittsfield, Mass., during the recent flood.

The plane, capable of a cruising air speed of 75 m.p.h. had to make a flight along a stretch of coast line about 75 mi. in length. The trend of the shore for the first half of the flight was about due east. Due to an abrupt change in the general direction of the coast, the latter half of the flight had to be made almost directly south. The wind at 9,500 ft., the altitude from which the photographs were taken, was blowing from the north-east at the rate of 25 m.p.h. A resolution of the vector forces involved indicates a speed over the ground during the first half of the flight of 53 m.p.h. and one of 94 m.p.h. for the last half.

Assuming a shutter with .5 in. wide slit giving an exposure of .01 of a second on an 18 by 24 centimeter plate, the travel will be approximately seven inches, so that the time elapsing between the exposure of the first edge and the last edge will be about .14 of a second. The error of the film will be directly proportional to the distance the plane has travelled during this interval of .14 of a second. At a ground speed of 53 m.p.h. the error would be about 10.88 ft. while for the higher ground speed of 94 m.p.h., the distortion would be increased to 19.31 ft. Such irregularity in this error is obviously intolerable.

In spite of these handicaps the photographers and pilots that have been egaged in this work for the Hydrographic Office during the past few years have acquired such skill that a "holiday" is a rarity.

The difficulty that the pilot encounters in taking the photographs is reflected in those which have to be overcome by the cartographer in utilizing them in the production of his chart. The orientation and relative scale of adjacent pictures are of relatively greater difficulty in their accurate determination where they have been taken on curvilinear or irregular flights than they are where constant courses have been steered. The map maker, by reason of the fact that all of his overlap between two adjacent photographs covers the land, has a greater choice of prominent objects common to both photographs than has the chart maker where approximately half of the overlap covers a water area. The relative orientation between two adjacent land photographs is generally obtainable with approximate accuracy by inspection, while it is quite usual to obtain two adjoining photographs of a coast line which to all appearances might be fitted together at almost any angle.

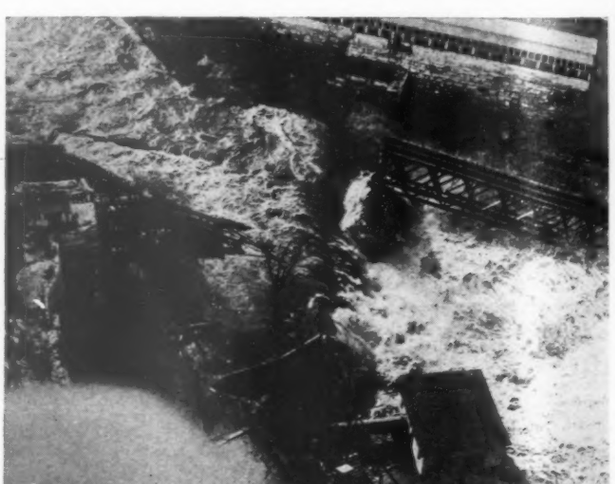
A description of the exact method used by the Hydrographic Office of the United States Navy follows:

In taking the aerial photographs, only the deliniation and azimuth of the coast line and such topographic features as will be of assistance to navigation are covered. Generally speaking, this means that the photographic flight is one closely paralleling the shore line. The overlap between individual photographs may be increased without expense over that possible in topographic mapping where the sides as well as the ends of the photographs must overlap. Between 40 and 60 per cent. is the rule. It is indeed fortunate that this increased overlap is permissible as it is badly needed to prevent "holidays" occurring due to irregular courses that must be flown.

The plane flies at a certain specified altitude, up to the present time about 10,000 ft., and the individual pictures cover an area of approximately one square mile. In the vicinity of triangulation stations the shore line is developed by ground methods for the distance of about one mile on each side. The result of this work is plotted on a field sheet at the desired scale. The aerial photographs covering this particular area are examined and the relation between the scale of the photographs and the actual area ascertained.

From these photographs by means of a pantograph set to give the necessary reduction, the coast line and other features are drawn on the field sheet. Then the photographs immediately adjacent to that overlapping on the area surveyed by ground methods are studied and three objects visible in both of these two photographs are located by measurement of the distance between these objects and the variation in scale between the two photographs may be discovered. The angles between the common points give the orientation of this second photograph.

The photograph is then placed on the pantograph, the necessary change in the pantograph setting made and the



(Acme)

A close up view of a railroad tressel at Rutland, Vt. that was half wrecked in the flood.

shore line of this photograph is drawn and tied up with that obtained by ground method. This process is continued until the second triangulation station and its shore line is reached. With triangulation stations approximately five miles apart, 60 per cent. of the shore line work is done by aerial photography. In the vicinity of the triangulation stations the coast is generally more accessible and this portion most adapted to development by ground methods. Thus the most difficult as well as the greater part of the shore line work is done by

aerial photography. Frequently the coast line is so difficult of access that it could be done readily by no other known method.

Two features of this method might strike an observer accustomed to dealing with aerial photographs as unusual. First no attempt is made to form a mosaic from the individual photographs, and, second, no apparent attempt is made to eliminate the unavoidable errors incidental to aerial photography.

It is accepted by all who have had to do with aerial photographic surveying, that it is useful only in conjunction with ground controls obtained by the established methods of surveying on the ground at least for really accurate work. Its great field of usefulness for the present appears to be for making preliminary reconnaissance and for filling in detail between control points. For these purposes it is without rival. One reason for this limitation of use is the fact that there are certain distortion errors liable to be present in the photographs which require consideration, and which cannot be so considered in the making up of a mosaic. Generally speaking this holds good for all governmental surveys, the only exception known to the author being the mosaic make by the Army Air Corps of the state of Delaware and that only for purely experimental purposes.

Method Has Proved Satisfactory

As yet, no errors which cannot be adjusted when the uncontrolled coast line is tied up to that developed by ground methods have been encountered, and heretofore it has not yet been necessary for the Hydrographic Office to adopt any method of rectification or rephotographing of the pictures to eliminate the distortion due to tilt.

This method has been given a thorough trial and has proved eminently satisfactory. The financial saving is very difficult to eliminate but the quality of the finished product has been distinctly improved and in a number of instances the surveys would have had to be indefinitely delayed or abandoned altogether had not planes been available for the taking of aerial photographs. So convincing has been the value of this work that all future hydrographic surveys of the United States will involve the utilization of aircraft unless the exigencies of the air services make planes or the aviation personnel to man them unavailable. For the present there appears no opening in governmental surveys of this character for commercial companies, but experience that will prove valuable later on when the field is opened may be gained by those interested by undertaking smaller projects for states and municipalities.

Emory B. Bronte Commissioned a Lieutenant in the Naval Reserve

A RECENT report from the Navy Department States: Emory B. Bronte, first civilian flier to make the flight from the West Coast to the Hawaiian Islands, has been commissioned a lieutenant in the Naval Reserve, for aviation duties for special service. Lieutenant Bronte flew from Oakland on July 14 in "The City of Oakland" and landed on the island of Molokai on July 15.

An International Airport to Be Established at Sonora, Mex.

THE DEPARTMENT of Commerce made public a statement regarding an international airport to be established at Sonora, Mex. The landing field, which is one mile square, is just east of Agua Prieta, Sonora, Mexico. Half of the area was donated by Agua Prieta. It is proposed to establish an air mail and passenger service between Agua Prieta, Mexico and Douglas, Ariz.

Flying School Teaches Second Student to Fly in a Single Day

THE SECOND successful experiment in teaching a man to fly in a single day was completed at Lunken Airport recently, when instructors of the Embry-Riddle Flying School soloed Frank W. Shelton, Jr., after 5 hr. and 34 min. of dual instruction.

Shelton, a fourth year student in the pre-medical course at the University of Cincinnati, was selected by a popular voting contest among the students, as the subject for the experiment. He received two votes less than another student, but the winner failed to pass the U. S. Department of Commerce test and could not be taught.

At 9:30 on a Sunday morning, Shelton had his first ride in an airplane, and this first ride was the real thrill of the day for him. After he and Pilot Rader had climbed to 2500 feet in the OX5 Waco instruction plane, the engine began to knock and Rader cut his switch. Then, with a dead stick, he landed his student, giving him one of the real experiences of flying after his first 15 minutes in the air.

Left to right, W. Vine and H. Rader, instructors; R. D. Harris, head of the school, and F. W. Shelton, Jr. the student who learned to fly in one day.

After 19 minutes more of "air work" in another plane, also a Waco, Shelton made his first landing at 10:49. By 12:56 he had made 23 landings, and after a few wingovers with the instructor, the student and instructor landed for lunch, which was served on the field.

All this time, a brisk breeze was blowing, at times reaching a velocity of 20 m.p.h. By 3 o'clock, Shelton had made 40 landings, and he rested again at 4:16 after his 53rd landing. At 6:03, he made his 74th landing, the last under dual instruction, and Rader stepped out of the plane and sent him around alone. Shelton took the plane off in good style, and after a few minutes in the air he circled into position, glided down and landed. Pilot Rader reported that Shelton's first solo landing was very good, his wheels and tail skid striking the ground simultaneously.

John Paul Riddle, general manager of the Embry-Riddle Co., laid especial stress on the fact that the short instruction does not make Shelton a pilot. It merely shows that a man can learn to fly in a short space of time, and has no great value in the matter of flying instruction methods, since it will not be repeated as a regular program. Shelton intends to take several more check hops and solo flights and apply for his student pilot's license. The test was under the direction of Raymond D. Harris, head of the flying school.

The Fourth Congress *of* Aerial Navigation

Delegates From Forty Countries Convene in Rome, Italy

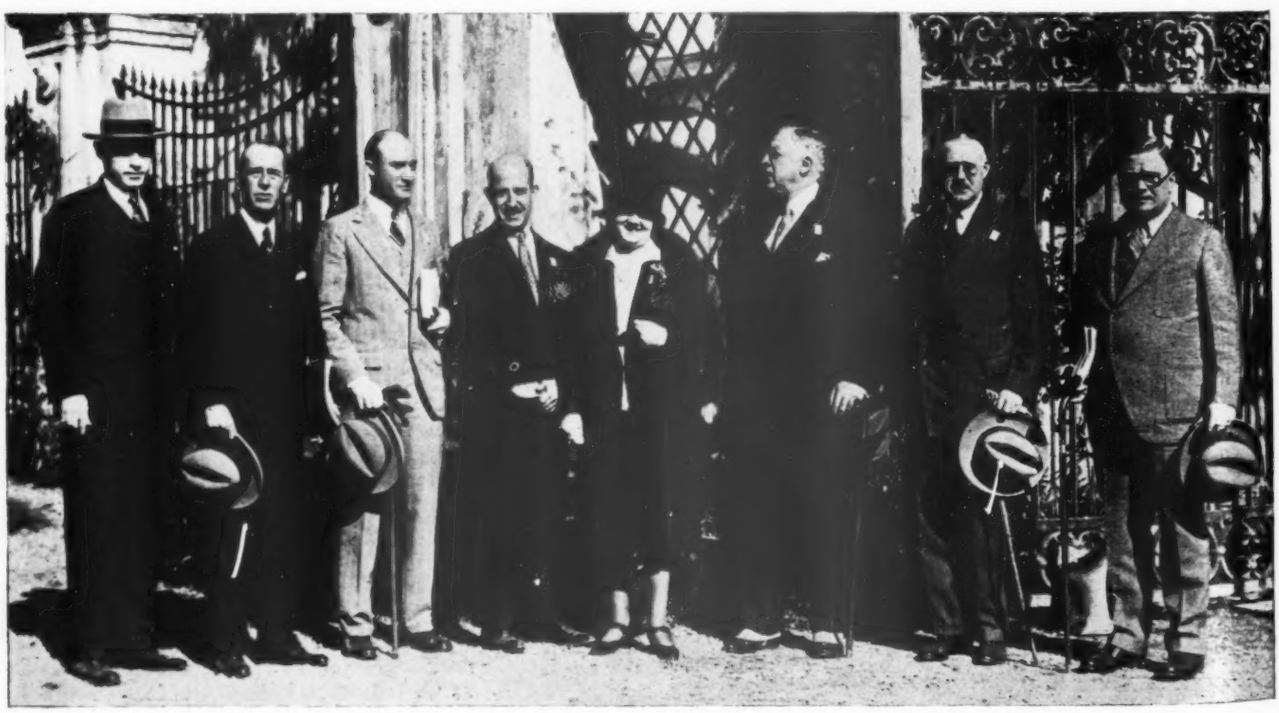
By LESTER D. GARDNER

Delegate of the U. S. Department of Commerce

AMERICAN NEWS of the Fourth Congress of Aerial Navigation held in Rome during the last week in October was limited to but a few lines hidden away so inconspicuously in newspapers that few persons knew that forty countries had sent delegates, at the invitation of the Italian Government, to discuss the most recent developments in air transport. As these Congresses are held only every two years, this session, because of the remarkable world wide expansion of air traffic that has taken place since 1925 had an importance that has not even yet been fully recognized. When the hundred and fifty papers that were presented are made available for general study, it is not too much to say that in them will be found the best contemporary source of information concerning air transport in all its aspects that is available.

Premier Mussolini sponsored the Congress in the absence of Prince Amedio di Sovoia-Aosta, Duke of Puglie, the President, whose marriage to the Duchess of Guise was celebrated in Naples the following week. The Honorary Committee was composed of the heads of the Italian Government while the committee in active charge of the program was under the direction of the Under Secretary of State for Aeronautics, Italo Balbo and included the leaders in Italian aviation. The membership of the Congress was of two classes; delegates representing the governments and honorary members representing clubs, aeronautical organizations and aviation companies. Seven hundred and fifty guests attended the sessions which were held from Oct. 24 to Oct. 29.

The United States was represented by Lieut. Comdr. Ralph F. Wood, U.S.N.; Maj. George E. Lovell, U.S.A.; John Jay Ide, Technical Representative in Europe for The National Advisory Committee for Aeronautics; Maj. Lester D. Gardner, Publisher of AVIATION, who represented the U. S. Department of Commerce; Lt. Col. Virginius E. Clark, representing the Aeronautical Chamber of Commerce; Clifford B. Harmon, President of the International League of Aviators. Major Gardner read a paper on "The Development of Civil Aeronautics in America" and Colonel Clark presented a paper on



An American group attending the Congress. Left to right, John J. Ide, J. A. McClean, Maj. George E. Lovell, Jr., Lewis Wickersham, Mrs. Lester D. Gardner, Clifford B. Harmon, Maj. Lester D. Gardner and Lieut. Col. V. E. Clark.

"Commercial Aeroplanes in the United States of America". All European countries were represented. Other countries sending delegates were: Afganistan, Argentina, Bolivia, Brazil, Chile, Columbia, Cuba, Equador, Japan, Guatamala, Mexico, Paraguay, Peru, South Africa, Uruguay and the United States. For such a representative group of delegates the Italian Government did everything possible to make the visit not only pleasant but profitable from an aeronautical standpoint.

The Congress started with the official opening in the magnificent Senatorial Palace on the Capitoline Hill. The presence of Premier Mussolini awakened the greatest interest and the demand for tickets was out of proportion to the capacity of the hall. Signor Mussolini was accompanied by the Under-Secretary for Aviation, Italo Balbo, and the Governor of Rome, Principe Spada Potenziani, who welcomed the delegations to the Eternal City. Principe Potenziani spoke in Italian, Premier Mussolini in French.

Italo Balbo, Italian Under-Secretary of State for Aeronautics.

As all of the military delegates and Italian officers were in uniform with decorations, the occasion was one of great brilliancy. On the afternoon of the opening day there was a magnificent reception at the Palace of the Conservators. The scene was a gorgeous one. Very appropriately the new winged figures with the quadriga had been recently placed on the adjoining national monument to King Victor Emmanuel II.

The reception at which all the magnificent hospitality of the Eternal City was in full display was given by the Governor of Rome to the delegates. The opening feature was a concert in the hall of Curatiae and Horatie. An elaborate collation was served after the concert. The sessions of the Congress were held mornings and afternoons at the Corsini Palace, the beautiful home of the Royal Academy of the Lincei (Lynx Eyed, founded in the 17th century and so called because science is supposed to peer everywhere). It contains the famous Roman National collection of art and here, surrounded by world famous paintings and sculpture, the delegates met and discussed the problems of aerial navigation. Nowhere, except in Rome, could such beautiful and historic settings be provided for such a meeting and it is noteworthy because of the indication it gives of the importance attached to aviation in the minds of governments of Europe.

The delegates were divided into five groups: Aerial Navigation, Propaganda, Scientific and Aerology, Technical, Legal and Medical. At each meeting the papers, digests of which had been printed in four languages, were discussed. Interpreters translated the proceedinggs so that all delegates could follow the discussions.

On the last day a banquet was given at the Hotel Excelsior. His Excellency Signor Balbo presided and after an elaborate menu expressed the appreciation of the Italian Government in receiving such representative delegations from various countries. Responses were made by delegates from several countries after which Clifford B. Harmon presented Major di Bernardi with the Harmon Trophy of the International League of Aviators in recognition of his setting a new world's speed record in 1926.

Major Gardner in concluding his paper made some interesting predictions. He said:

"If in one and a half years this remarkable progress has been made, it is safe to say that the next five years will see developments in this field which will more than fulfill the hopes of even the most sanguine exponents of air travel. The United States will forge ahead in its air commerce at home. Huge air liners will fly from one end of our continent to the other day and night, with the safety and assurance of the best equipped railway lines of to-day.

"The American people are opposed to direct subsidies of any kind. Indirect subventions are, however, viewed as proper encouragement to pioneering enterprises. The railroads and steamship lines were given financial assistance in the form of direct and indirect aids when these methods of transportation were inaugurated. The American automobile development was made possible by the building of good roads by the Federal Government, the states and the municipalities. In a similar way civil aeronautics is being encouraged by all the governmental agencies in the United States. The Federal Government is planning, mapping and lighting airways. The states are making it easy for air transport companies to operate. The cities are providing airports and landing fields for air service and air transport operation. But more important than these, the American public has become airminded. It already sees the possibilities of the airplane and the airship as a means of transport.

U. S. Development to Differ

"The United States will develop its commercial aeronautics along lines that differ widely from European practice. Planes are being constructed to fulfill every need but those that can carry heavy loads of mail and goods are the most immediate requirements and these are being manufactured in large numbers. The demand for fast passenger service by air in the United States has not been as great as in Europe but it is anticipated it will equal European travel within a year. The operation of satisfactory fast night trains between principal American cities makes it somewhat difficult for daytime airplane service to offer much saving of time. The lighting of the airways now gives us night air transportation.

"If America proves to the world that airplanes may be operated for the carrying of mail and merchandise with financial return, it may demonstrate a fundamental fact that industry in all parts of the world may utilize with profit. While this progress is being made in the United States, the European air lines are gaining experience in carrying passengers which may be useful to American air transport companies. When both systems are proved to be commercially profitable, the combination of the three kinds of loan will add to the possibilities of the airplane.

"Thrilling achievements such as Lindbergh's flight point the way. Byrd, Chamberlin, Maitland, Hegenberger and Brock have added laurels to the skill of the American pilots. They form a corner stone of the foundation of a vast air commerce in that they establish confidence in the minds of the public. The reliable, steady worker will follow in the footsteps of such leaders. With the support of a people awakened to the benefits of air travel, they will progress with determination toward realization of a great vision—to make aircraft take its place with trains and ships as standard, safe and inexpensive means of transportation."

General Patrick Retires

Reaches Age of Statutory Retirement on Dec. 13, and Will be Succeeded by Brig. Gen. James E. Fechet

MIDNIGHT ON the thirteenth day of this month marks the statutory retirement of Maj. Gen. Mason M. Patrick as Chief of Air Corps and the appointment to that office with the rank of Major General of Brig. Gen. James E. Fechet, present Assistant to the Chief of Air Corps.

General Patrick has served as Chief of Air Corps since Oct. 5, 1921, and during his administration many and varied changes and events have taken place in the field of American military aeronautics. Among them were the passing by Congress of the Air Corps Act which authorized a five year expansion program, that called for, by the end of that period, 1800 serviceable airplanes, 1,650 commissioned officers and 15,000 enlisted men, including 500 flying cadets; the regulating of the supply situation in the Army Air Corps to operate on a satisfactory basis; the operating under a standard system of repair depots and engineering shops at Air Corps fields; the removal of the Materiel Division (formerly the Supply Division) from Washington to Dayton, O., and its consolidation with the Engineering Division; the removal of all activities from McCook Field to the new Wright Field; the standardization of three types of Army planes, pursuit, training and observation, and the beginning of a present attempt to perfect and standardize suitable types of bombing and attack planes.

General Patrick a Qualified Pilot

Some others include the elimination of the "Jenny" training plane; the development of Army transport planes by the Douglas Company and the Fokker Company; the progressive development of both water cooled and air cooled engines; the development of aerial navigation instruments and the radio beacon; the innauguration of parachute jumping instruction schools and establishment of parachute repair sections at Rockwell and San Antonio Air Depots to work in conjunction with the main parachute unit at the Fairfield Air Depot; the charting of the principal air routes over the country and the listing of municipal landing fields on specially prepared maps; improvements in the training of pilots, observers and mechanics, changes in the administration of the Air Corps Reserve; and an increased number of National Guard units, etc., etc.

The Army Air Corps flying performances during General Patrick's administration as Chief of Air Corps include the establishment of world's speed, endurance, altitude and load carrying records; the Around-the-World Flight, non-stop Coast to Coast flight, non-stop Canadian border to Gulf of Mexico flight, cross country flights, the Pan-American Good Will Flight and the California to Hawaii non-stop flight.

General Patrick is himself a qualified pilot and has the distinction of being the first Major General in the Army to qualify for a pilot's rating. This rating he obtained four years ago.

The retiring Chief of Air Corps was born in Lewisburg, W. Va., Dec. 13, 1863. After attending various public and private schools he entered the U. S. Military Academy. He served in the U. S. Army Engineering Corps; was Commandant of the Engineers' School, Washington Barracks; Chief Engineer of the Army of Cuban Pacification, and Commanding Officer of the Engineers' School, Camp Humphreys, Va.

Maj. Gen. Mason M. Patrick who retires as Chief of Air Corps on Dec. 13.

General Patrick's aeronautical activities first began when he was appointed Chief of Air Service, A.E.F., in May, 1918. This post he held until July, 1919, during which time he organized an air service which comprised 78,000 men, 6364 airplanes, 300 balloons and 802 hangars. On Oct. 5, 1921 he was appointed Chief of Air Service. For war service recognition General Patrick was decorated with the D.S.M., Comdr. Legion of Honor, Comdr. Order St. Maurice and Lazarus, Knight Comdr. Order of the British Empire and Comdr. Crown of Belgium.

The new Chief of Air Corps, Maj. Gen. James E. Fechet comes of good fighting stock and he has breathed the atmosphere of military precision and activity since childhood. He was born in Fort Ringold, Tex., Aug. 21, 1877.

He enlisted as a private in the 6th Cavalry, April 18, 1898; and was promoted corporal and sergeant and appointed a second lieutenant of cavalry July 25, 1900. He was promoted first lieutenant, captain, major and lieut. colonel, Regular Army. He participated in the Santiago Campaign, being wounded at San Juan July 2, 1898, and was also in numerous skirmishes on the Island of Samar, Philippine Islands, in June and July 1901. In 1904 he was graduated from the Infantry and Cavalry School, Fort Leavenworth, Kan. He was a Distinguished Marksman 1909, 1914 and 1915 and served with the Punitive Expedition in Mexico from March to Sept., 1916.

General Fechet is also a qualified pilot, having been on continuous aviation duty since Sept., 1917. He was officially announced as on a flying status from Oct. 5, 1917 and rated as a Junior Military Aviator from Nov. 13, 1918.

At the outbreak of the World War he was appointed

temporary lieutenant colonel, Aviation Section, Signal Corps, Aug. 5, 1917, and promoted to be temporary colonel, Aviation Section, Signal Corps, Feb. 26, 1918. He was honorably discharged from his temporary commission June 30, 1920. He was permanently transferred to the Air Service, Regular Army, Aug. 6, 1920.

During the World War, General Fechet was in command of various aviation fields,—Scott Field, Carlstrom Field, Dorr Field and Kelly Field. He was Department Air Service Officer of the Southern Department from May, 1919 to Sept., 1920, when he was assigned to duty in the Office of the Chief of Air Service, first as chief of the Training and operations Group and later as Chief of the War Plans Division. On July 1, 1924, he was detailed as Commandant of the Air Service Advance Flying School at Kelly Field, Texas. On April 27, 1925, General Fechet was appointed Assistant Chief of Air Service with the rank of Brigadier General.

A Crack Shot and a Sportsman

General Fechet is the type of man who works for the good of the whole rather than the individual. His service as a hard riding cavalryman prepared him well for bigger accomplishments. Yet with it all he is modest and unassuming, and not the type who seeks publicity, though he has obtained another post where the limelight shines continually. He is known throughout the service as a crack shot and a sportsman.

A striking illustration of his rating among fellow officers is contained in the following:

"What does Colonel Fechet look like?" a staff officer in Washington was asked, after the announcement had been made that the commander of Kelly Field had been selected for General Mitchell's job.

"Look like? Did you ever see a Frederic Remington picture of the hard riding cavalry officer? Well, Jim Fechet is

General Fechet pinning pilot's wings on General Patrick at a luncheon given in honor of his having obtained a pilot's rating.

a dead ringer for that picture. . . He looks exactly like a Remington cavalryman. Whenever you have a chance to meet Jim Fechet just take a good look at that fighting jaw of his. They don't make soldiers any better than Jim. He comes of good old army stock, and I think he inherits some of it from his father, who was a famous cavalryman."

The new Chief of Air Corps is the third of his family to be in the regular army. He is of French Huguenot extraction. His forebears settled in Michigan before the Civil War. His father was Colonel Edmond Gustave Fechet, who was brevetted for gallant service in the Battle of Antietam. He retired in the Summer of 1898, several months after his son had enlisted as a private in the cavalry. His uncle was Colonel Eugene O. Fechet, who, after active service in the Civil War, resigned from the army in the spring of 1875, because he found peacetime service too irksome, and went to Egypt to become a colonel in the Army of the Khedive.

Brig. Gen. James E. Fechet who will succeed General Patrick as Chief of Air Corps.

When the war with Spain broke out Col. Eugene O. Fechet, though he had been out of the army for nearly a quarter of a century, decided that it was his duty to return to the colors. He became a major of volunteers in the Signal Corps in May 1898, at the age of 52 and continued in active service until the Spring of 1910.

Both of the elder Fechets went to the front at the beginning of the Civil War with Michigan troops. Colonel Edmond G. Fechet went as a sergeant of the Seventh Michigan Infantry, afterwards going to the Tenth Michigan Cavalry, while Colonel Eugene O. Fechet, the uncle, served four years in the Civil War as a sergeant of the Second Michigan Battery of Artillery. In the Summer of 1864 the uncle entered West Point, and on his graduation in 1868 he became a Lieutenant of artillery. He was the only one of the three who had the advantage of the West Point curriculum.

As the result of his own request General Fechet will serve only one term of four years as Chief of Air Corps. This request was made, and approved by Secretary of War, Dwight F. Davis, during the month of June. At that time Secretary Davis also approved a policy of a like nature with respect to appointments of assistant chiefs of the Air Corps.

With the Air Corps becoming a stronger arm of defense each new day, and with a man of resourcefulness and action at his head, it is highly probable that by the time of General Fechet's voluntary retirement the U. S. Army Air Corps will be an air fighting organization second to none.

Will Try for World's Endurance Record in a Stinson Monoplane

TESTS ARE now being completed on a Stinson-Detroiter monoplane at Curtiss Field, Long Island, N. Y., in preparation for an effort to break the world's endurance record now held by the two German aviators, Risticz and Edzard. The plane, which will be piloted by George Weis and Louis Solomon was christened the "Adelaide". It is powered by a Wright Whirlwind J-5 engine. The plane is very much the same as the Stinson-Detroiter monoplanes used by Brock and Schlee, Haldeman, and "Eddie" Stinson on their long distance flights. It is stripped of all extra equipment and fitted with a large fuel tank in the cabin. The wheel brakes have been eliminated.

Front quarter view of the new Curtiss attack plane, the A-3 "Falcon".

The Curtiss Attack Plane

A-3 "Falcon" is Fitted With Six Machine Guns, Two Of Which are Mounted in the Bottom Wings

THE CURTISS "Falcon" originally produced as a two-seater observation airplane for the U. S. Army Air Corps, has evolved, like the single-seater Curtiss "Hawk", into a series of two-place machines, to fulfill various functions in military operations.

The latest development in this series is the A-3 attack plane, designed for ground attack on trenches, troops, supply trains, and the like. This type of warfare, used to only a limited extent in the World War, is undoubtedly destined to be an important factor in future conflicts, and consequently the Air Corps is developing aircraft especially suited for this work.

The A-3 "Falcon" resembles the observation type of "Falcon", with the exception of armament which has been greatly increased. In the A-3, one 30 caliber Browning machine gun is located in each lower wing, with the muzzle protruding through the leading edge. Several hundred rounds of ammunition for each gun are carried in ammunition boxes within the wings. These wing guns are operated by electric triggers on top of the control stick, and are so arranged that the pilot can fire either gun independently or both simultaneously.

In the fuselage, two Browning 30 caliber guns are mounted, instead of one as in the observation type of "Falcon." Both are of the fixed type, synchronized to fire through the propeller disc, and operated by triggers on the control stick.

Defensive armament, as in the observation plane, is provided by a double Lewis gun on a scarff mount atop the rear cockpit.

In addition to the above, the A-3 carries two bomb racks, fitted into the under surface of the lower wings, and capable of carrying a quantity of twenty-five pound fragmentation bombs. These can be released individually or in salvo by the pilot.

Thus the complete armament of the A-3 consists of four machine guns for offensive warfare, two defensive guns, and a quantity of small bombs. The radio and camera equipment which is normally carried by the observation type "Falcon" is not provided in the A-3, but can be installed if desired.

Preliminary flight tests have shown the A-3 to possess a top speed of approximately 147 m.p.h. This, combined with

Side view of the Curtiss attack plane.

its high degree of maneuverability and complete armament, makes it a decidedly formidable weapon of attack.

Another version of the attack plane, being produced for both the Army Air Corps and the Marine Corps, is similar to the A-3 but powered with the Pratt and Whitney "Wasp" air cooled engine. The "Falcon", like all recent Curtiss types is constructed with a detachable engine mount and the substitution of powerplants is thus easily made without any change in the airplane itself. Flight tests on the "Wasp" engined attack plane will be made within two weeks.

As an observation airplane, for which the "Falcon" was originally designed, three types are now being produced. The O-1B, latest development of the original D-12 observation

Close up of the nose of the A-3. Note the muzzle of the machine gun in the leading edge of the wing.

plane, is now being produced in large quantities as the standard observation type of the Air Corps. This plane, with the Curtiss D-12 engine, has a top speed of about 147 m.p.h., and a cruising range of 600 mi. at 113 m.p.h.

A variation of this type, for use by Army and National Guard, is powered with the Liberty engine, and still another type, for Army and Marine Corps, is equipped with the Pratt and Whitney "Wasp" engine. Both of these latter types are identical with the O-1B observation plane, except for powerplant.

Thus the original Falcon has been developed into a series of two-place observation and attack planes for the military air services of the United States. All of these machines are of essentially the same basic design, which has been thoroughly service tested over a period of several years, and in which, therefore, maintenance difficulties have been reduced to a minimum.

Construct Spruce Storage Shed

J. V. G. POSEY & Co. of Portland, Oregon, is constructing at Haquiam, Wash., a storage shed especially for airplane spruce. This shed will have a floor space of 100,000 sq. ft., and will be used for storing and preparing orders for shipment after the stock has been manufactured and cured. Temperature and humidity will be constantly regulated by automatic thermostatic control.

Posey & Company supply airplane spruce rough green, rough air dried, kiln dried rough or finished to size. Mr. Galloway, the superintendent of the plant spent September visiting aircraft producers in the middle west and east. He found that manufacturers preferred their spruce kiln dried to government specifications at the mill and finished to size. This practice saves freight and it saves waste.

Story Eaglerock Sales Co., Opens Aviation School at Tacoma, Wash.

THE STORY Eaglerock Sales Co., distributor of Alexander products in Western Washington, has recently opened a school of practical flying. The course includes theory of flight, motor repair, aerial photography, business administration, aerodynamics, and six hundred minutes of actual flight instruction. The school uses the system of report cards whereby each student is graded with percentage in accordance to his ability to pass the various subjects offered.

Classes are held three times a week. The purpose of these classes is to give the student the most thorough training possible in all subjects heretofore mentioned. At the present time all instruction is given in Eaglerock planes. A K-1 aerial camera is used in instruction in the art of aerial photography and the command of the business office is at the disposal of the student so that he may thoroughly comprehend the business management.

C. L. Langdon, winner of the San Francisco-Spokane Air Derby, is acting as chief pilot and chief flying instructor with Virgil Adair as his assistant. N. C. Atkins is in charge of the repair shop with Orraine Martin as his assistant. J. B. Story is attending to the enrollment of students and business management while Mrs. Story is holding the secretarial position. The school is located at the Mueller-Harkins Airport just seven miles from the business district of Tacoma.

Method of Installing Valve Seats Lengthens Life of Hisso Engine

ACCORDING TO a letter from C. D. Gray of Salt Lake City, Gray's Garage has developed a method of installing replacement valve seats in Hispano-Suiza engines that greatly lengthens the life of these engines. Discarded Hispano-Suiza banks can be reclaimed and will give long service.

A Willis-Jones Precision Valve Reseater with certain attachments, made by Gray's Garage, is used. The reseater consists of a base, a radial arm, pilots and cutters. The cutters are held in positive alignment by the pilot and the radial arm which is fast to the base and this in turn is bolted to the engine bank. The pilot is selected so as to fit snugly into the valve stem guide and thus assure perfect alignment of the cutter. A cut is made through 3/16 inch of steel and 1/16 inch of aluminum. The cut when complete is 2¼ inch in diameter by 1¼ inch deep. The replacement seat is made of high grade cast iron and is sufficiently larger than the cut to get a snug driving fit. The replaced seat cannot cause pounding or work out because it is exactly and firmly placed. It is afterwards trued up by the same cutting equipment and the valve ground in.

N.A.C.A. Technical Note No. 267

TECHNICAL NOTE No. 267 entitled "Pressure Distribution on Wing Ribs of the VE-7 and TS airplanes in Flight" by R. V. Rhode was recently published by the National Advisory Committee for Aeronautics. This paper is the first of a series of notes, each of which presents the results of pressure distribution tests made by the N.A.C.A. on single wing ribs of the VE-7 and TS airplanes for a particular flight condition. This report deals with level flight results presented in the form of curves showing the comparison between the pressure distribution over a representative thin wing, R.A.F.15, and a moderately thick wing, U.S.A.27, for various angles of attack.

The Albany Conference

New York Holds First Statewide Aviation Conference And Adopts Regulation and Safety Program

A FOUR-PART program to regulate and safeguard aviation in New York State was adopted at the first statewide aviation conference held at Albany on Monday, Nov. 28. F. Trubee Davison, assistant secretary of war, and William P. MacCracken, assistant secretary of commerce for aeronautics, sounded a warning of the dangers of uncontrolled flying.

The program is as follows:

Petition the 1928 Legislature next month to create a standing committee on aviattion to inquire into the necessary laws that should be enacted.

Create a New York State Conference of Aviation to cooperate with the Legislature.

Prepare at once legislation designed to set up a system of state regulation and control of flying and fliers.

Introduce other legislation designed to authorize cites, villages, counties and park commissions to appropriate money or issue bonds for the establishment of airports and aviation fields.

Close to 400 persons, including city, state and federal officials, attended the conference. Among those present were notables in the field of aviation. The importance of this conference is nationwide as it was the forerunner of similar meetings to be held in other states during the winter.

F. Trubee Davison, assistant secretary of war.

Mr. Davison urged the city and state officials to unite in driving the "quack" flier out of aviation, arguing that he is just as dangerous as is the quack in medicine.

"New York State," said Mr. Davison, "should fall into line with states that cooperate with government efforts to rid the skies of unskilled pilots and flimsy planes. Federal laws do not apply to aircraft not engaged in interstate flying. For instance, an unlicensed pilot can go anywhere he wants to in New York in an unlicensed plane and the ship is usually a flying coffin, long overdue on the scrap heap.

"Planes that have no license—state or federal—should not be permitted on the flying line of any municipal airport in New York. The same should apply to pilots.

"Quack fliers are as dangerous as quack doctors and flimsy planes as dangerous as ships with rotten hulls. There are certain 'schools of learning', long on promises and short on ethics, known as diploma mills in aviation. Their graduates constitute a distinct menace to real air progress.

"So far, it has not been possible to control the quack pilot at his source; hence, it is necessary to stop him at the field. In other words, beware of the pilot who has no license and steer clear of the plane that lacks registration numerals on its wings.

William P. MacCracken, Jr., assistant secretary of commerce for aeronautics.

"Air regulation and the licensing of planes and pilots is essential for the protection of the public and for the promotion of commercial aviation by responsible operators of legitimate lines. The sooner we eliminate reckless and irresponsible pilots, the sooner will air transportation take its place among our great public utilities.

"I am confident this conference will speed action toward the adoption by the Legislature of a well considered aviation program. It is essential that such a program is well considered because aviation should be helped and not hindered by supervision. The last session of the Legislature saw the introduction of bills aiming at state regulation over aircraft. These measures were not desirable. They failed, among other things, to consider the need of unity between state and federal statutes. Commercial air line pioneers operate against enough handicaps without having to shoulder those of haphazard legislation. New York and other states should enact air laws but they should be harmonious with federal laws. It is impossible for pilots to carry law libraries in their cockpits. This they would have to do if states had varying statutes. The federal air laws have proven their value. They should be adopted by New York to meet state needs.

"The licensing of aircraft and pilots should be the first step toward the establishment of a definite state air policy. Another question to determine is the role the state should play in the development and maintenance of airways. Should this work be left entirely to the localities or should the state shoulder some of the burden? Should airways, from a maintenance standpoint, be placed on a par with highways? So

far, airways development—and by that I mean airport construction—has been borne entirely by the localities despite the fact that it is open to doubt if an airport, in a strict sense is solely a local proposition."

Mr. MacCracken emphasized the necessity of safeguards in aviation.

"It would seem", he said, "that the problem of regulating aviation should be rather simple, but it is not. Three principal difficulties have been encountered. One of these is due to our particular form of government, involving a division of power between the Federal Government and the states. Second, is the difficulty in providing regulations which are adequate, and at the same time not so stringent as to stifle development of this new art. The third is inherent in aviation and is due to its mobility and flexibility.

Many Applications Still Pending

"Unless action is taken by the state authorities, or the Air Commerce Act is amended to require the licensing of all aircraft and airmen, there will be a certain percentage of planes operating in this country that have not been inspected and they will be flown by pilots who have not passed any examination, either as to their ability, physical fitness, or mental capacity to fly.

"It is interesting to note that of some three thousand civilian owned aircraft that appear on the Department's records, the owners of less than one-fourth of them have applied for identification marks only. It is only fair to say that many applications for licenses are still pending. Several of the states have recognized that in order to adequately protect their own citizens, both on the ground and in the air, it was necessary to provide some system of regulation.

"Since the passage of the Air Commerce Act, two types of regulatory legislation have been enacted. One sets up a local board for licensing aircraft and airmen, but exempts Federal licensees from securing a state license. The other makes it mandatory that all aircraft operating in the state shall be licensed by Federal authority.

"The Federal government recognizes the desirability of uniformity, not only in the Air Traffic Rules, but also in the qualifications and classification of pilots and in the certification of aircraft, and the Department of Commerce will cooperate insofar as it is able, with the states that desire to accept the Federal standards.

Special Committee Makes Report

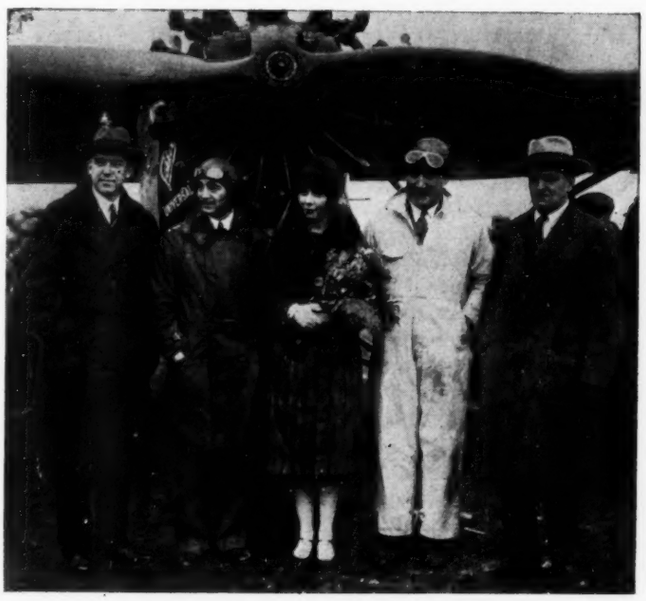
"These standards fall into six chapters. The first—licensing of aircraft, including experimental planes. Second—marking of licensed and unlicensed aircraft so as to distinguish between the two. Third—requirements relative to the operation of licensed aircraft. Fourth—licensing of pilots and mechanics. Fifth—Air Traffic Rules. Sixth—penalties and miscellaneous provisions.

"Pilots' licenses are divided into four classes—transport pilot, limited commercial pilot, industrial pilot and private pilot. Applicants for these licenses must pass physical and theoretical examinations and give a practical demonstration of flying ability. Thereafter the license will be renewed upon passing a periodical physical examination and submitting evidence of the required number of hours of solo flying. In the case of the transport pilot, the physical renewal examination is taken every six months; in all other cases, once a year."

A special committee appointed by the conference made a report which favored the creation of a New York State conference, to be made up as follows: The president of the State Conference of Mayors and ten mayors appointed by him; the president of the New York State secretaries conference and ten Chamber of Commerce members named by him, each member to represent only one city; three New York State resident members of the Aero Chamber of Commerce, one member representing the New York State Association of Real Estate Boards, the Governor of the State National Aeronautic Association chapters and four members named by him, and five members of the New York State Department of the American Legion to be appointed by the commander of the Legion. The committee report was adopted.

Acosta and Bergin to Try for New World's Endurance Record

AT THE time of this writing preparations are being completed for an effort to regain for the United States the world's airplane endurance record. The record is now held by Risticz and Edzard, the German aviators who on Aug. 5 of this year remained in the air 52 hr. 25 min. superceding the record of 51 hr. 11 min. made by Bert Acosta and Clarence Chamberlin last spring. Bert Acosta, with Emil Bergin as co-pilot, intends to "come back" by again breaking the record. Announcement of the proposed flight was made a short time ago by Robert W. Porter, vice-president of the



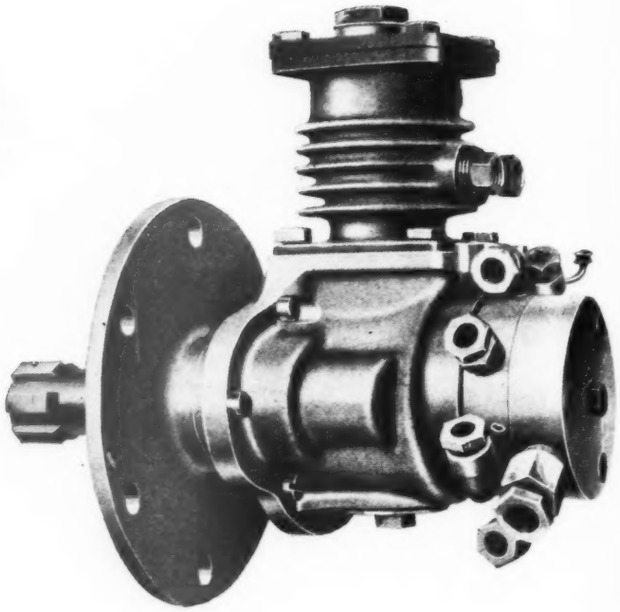
A group at the christening of "The Splitdorf"—left to right. William P. MacCracken, Jr., Emil Bergin, Miss Elizabeth Robinson, Bert Acosta and F. Trubee Davison.

Splitdorf-Bethlehem Electrical Co., Newark, N. J., which is sponsoring the flight. The flight will be made from Curtiss Field, L. I.

For his attempt to regain the endurance record Acosta will use a Fokker Universal built by the Atlantic Aircraft Corp., Hasbrouck Heights, N. J. "The Splitdorf" as the plane was recently christened, weighs 2100 lb. empty. It is intended that it will take off for the endurance flight weighing about 5500 lb., allowing 2600 lb. for 438 gal. of gasoline, and including the pilots and incidentals.

"The Splitdorf" will be powered by a Wright "Whirlwind" J-5 engine. It will be the usual Wright standard except for Splitdorf spark plugs and the Splitdorf SN 9 double magneto, a newly designed aircraft magneto, which is dust and water proof and weighs 10 lb. This will be a saving in weight of approximately 4 lb. per magneto and allow a few extra pounds of gasoline to be carried.

The Heywood Injector Starter



Designed for Use on Airships, Seaplanes and Land Planes

ONE OF the most useful and reliable aircraft accessories now on the market is the Heywood Injector Starter manufactured by the Detroit Air Appliance Corp., Detroit, Mich. The Heywood Starter is for use in airships, seaplanes, land planes and trucks, and was designed by Charles F. Heywood. Mr. Heywood's experience in the use of electric starters dates back 27 years, and the designing of the Heywood Injector Starter is another of his worthy products. Many leading aircraft manufacturers are now equipping their products with this accessory.

Apparatus Weighs Only 27 Lb.

When installed the apparatus is very compact and weighs but 27 lb. The installation of this starter in any airship eliminates hand starting and cranking, inasmuch as it is operated in the same manner as the starter used in the automobile. The pilot seated in the cockpit of his plane merely presses the starting button with his toe, and due to the rapid operation of the starter's mechanism, the engine will respond almost instantly.

The Heywood Starter underwent a most strenuous test recently in the Captain Wilkins Flight to the North Pole. At that time Captain Wilkins used a Stinson-Detroiter, and the Heywood Starter was part of the equipment. Upon his return to Detroit, Captain Wilkins complimented the Detroit Air Appliance Corp. on its product, and stated that the starter functioned perfectly in the severest blizzards, and eliminated the necessity of his swinging the "prop". His statement went further on to state that the apparatus never failed to function at any time.

A general description of the Heywood Starter is as follows:

By applying a mixture of air and gasoline under high pressure to an engine's combustion chambers, the engine is put in motion almost instantly at 300 to 500 revolutions per minute with the starter. The air pressure is substantially equivalent to the explosion pressure when an engine is running and effects the same action. The flow of air and gas being perfectly timed, starting is practically instantaneous.

Engines of great power and high compression, such as are used in aircraft are often slow to start, particularly in cold weather, because of the difficulty in getting sufficient speed of rotation to cause the carburetor to function to the extent of supplying a proper mixture for starting. The Heywood starter was designed with the idea of overcoming this difficulty.

The starter's equipment comprises a small crank or cam-driven air compressor, a seamless steel tubular tank of about 6/10 cu. ft. capacity, an automatic valve that releases the load from the compressor when 400 lb. pressure is obtained, a release valve for starting, inlet valves for the cylinders, distributor and copper tubing. The operator by pressing a starter button, releases the compressed air from the tank to the distributor which is timed and rotates with the engine. This distributor divides the air into two paths. The greater portion of the air is conducted through a small copper tube to the cylinder that is on its power, there being a tube from the distributor to each cylinder. Entering the cylinder, the air forces the piston downward and the engine's rotation begins.

Starter is Entirely Automatic

Simultaneously, the smaller portion of the air and a properly proportioned amount of gasoline goes through a carbureting process and is forced into the cylinder which is on its compression stroke. Ignition takes place when this stroke is complete or slightly past top dead center, with the effect of speeding the rotation already begun by the air. A few revolutions, forced in this way, bring the carburetor quickly into action and starting is complete. The starter is entirely automatic, and operated from the pilot's cockpit, and may start the engine without any assistance whatever. Another feature of the starter is that while in flight it will act as a super-charger for the engine, should the pilot desire more starter button. While it is a common fact that should the speed and power. This comes about in the same manner as starting the motor. All that is required is the pressing of the starter button. While it is a common fact that should the automobile driver endeavor to do this with his machine, it

would ruin the starter as well as other parts of the motor, yet with the installation of the Heywood Starter in the airplane, this can be done, without the slightest injury to starter or engine. In fact it has proved that there is absolutely no damage done.

N.A.C.A. Publishes Report on Combustion Time in Cylinder

THE NATIONAL Advisory Committee for Aeronautics recently published report No. 276 entitled "Combustion Time in the Engine Cylinder and its Effect on Engine Performance" by Charles F. Marvin, Jr. As part of a general program to study combustion in the engine cylinder and to correlate the phenomena of combustion with the observed performance of actual engines, this paper, which was outlined by S. W. Sparrow, and the work undertaken at the request of the N.A.C.A., presents a sketchy outline of what may happen in the engine cylinder during the burning of a charge. It also suggests the type of information needed to supply the details of the picture and points out how combustion time and rate affect the performance of the engine.

A theoretical concept of a flame front which is assumed to advance radially from the point of ignition is presented, and calculations based on the area and velocity of this flame and the density of the unburned gases are made to determine the mass rate of combustion. From this rate the mass which has been burned and the pressure at any instant during combustion are computed.

This process is then reversed in an effort to determine actual rates of combustion and flame velocities from the pressures as recorded on indicator diagrams. The effects of different rates of combustion on engine performance are then discussed and the importance of proper spark advance is emphasized. Report No. 276 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

English Aircraft Firm Builds New Biplane for the R.A.F.

THE WESTLAND Aircraft Works, Yeovil, England, recently completed what appears to be a very interesting military biplane. As the plane is on the British Air Ministry "Part Publications List" only a few details on the plane may be published. The Westland "Wapiti" powered with a Bristol Jupiter engine is a general purpose airplane which can be put to a variety of uses and is now in production for the Royal Air Force. It carries equipment for bombing, wireless, and photography. The fuselage is of all metal construction being built up from square tubes in a way which lends itself to rapid production. There is plenty of room in the fuselage for all the varied equipment which has to be carried.

The Westland "Wapiti" taxiing on the ground.

The machine has a very good performance and is pleasant on all controls. Balanced ailerons are fitted to all four wings. Gasoline and oil tanks are carried inside the fuselage, one gasoline tank feeding by gravity, the others by means of a Vickers wind-driven pump. Particular attention has been paid to facilitate the inspection of the fuselage and engine mounting, and the cowling can be removed in a few seconds as far back as the pilot's seat exposing the engine controls, tanks and the front portion of the fuselage. The undercarriage is of the Patent Westland Oleo pneumatic type.

The principal dimensions are:

Span	46 ft. 9 in.
Length	31 ft. 8 in.
Height	11 ft. 4 in.
Chord	5 ft. 9 in.
Wing area	499 sq. ft.

Goodyear Industrial University Has New Course in Aeronautics

A CLASS in aeronautics, the first of its kind in American industry, has been inaugurated in the Industrial University of The Goodyear Tire & Rubber Co., at Akron, O.

The new course, taught by aeronautical engineers and airship and balloon pilots from the staff of the Goodyear company and the Goodyear Zeppelin Corp., a subsidiary, embraces all the work usually given in a "ground school", and includes practical flying instruction in the Goodyear air yacht "Pilgrim."

Goodyear Industrial University, the largest school of its kind in the United States, annually enrolls for all the courses given about 2000 students from the factory and office forces.

Twenty-five men are at present taking the aeronautics training although more than twice that number of men outside the rubber company personnel have applied for the work, according to university officials.

During the war Goodyear maintained a school in balloon and airship instruction for the Army and Navy services and several hundred officers of both branches qualified as pilots at the Wingfoot Lake Air Station of the company near Akron. Goodyear has been in the lighter-than-air craft manufacturing business for more than 15 years.

Among the instructors of the new course in aeronautics are Dr. Karl Arnstein and W. T. Van Orman.

Model Airplane Manufacturer Completing Tour of Country

JAMES A. DIXON, of Silver-Dixon Co., Cleveland, Ohio, manufacturer of miniature and model airplanes, is completing a country-wide tour in the interest of model airplane sales. During his tour, Mr. Dixon interviewed manual training teachers and school heads, directors of Boy Scout Posts and secretaries of Y. M. C. A.'s and found an unusual amount of interest in the subject of model planes.

Mr. Dixon has been interested in aeronautical subjects for many years and believes that in order to properly interest boys in model planes, something must be given them that is more than a toy.

Airplane Radio Sets

Some General Radio Communication Information On Selecting An Aircraft Set for Commercial Service

By LAWRENCE A. HYLAND

Radio Engineer

Article Three

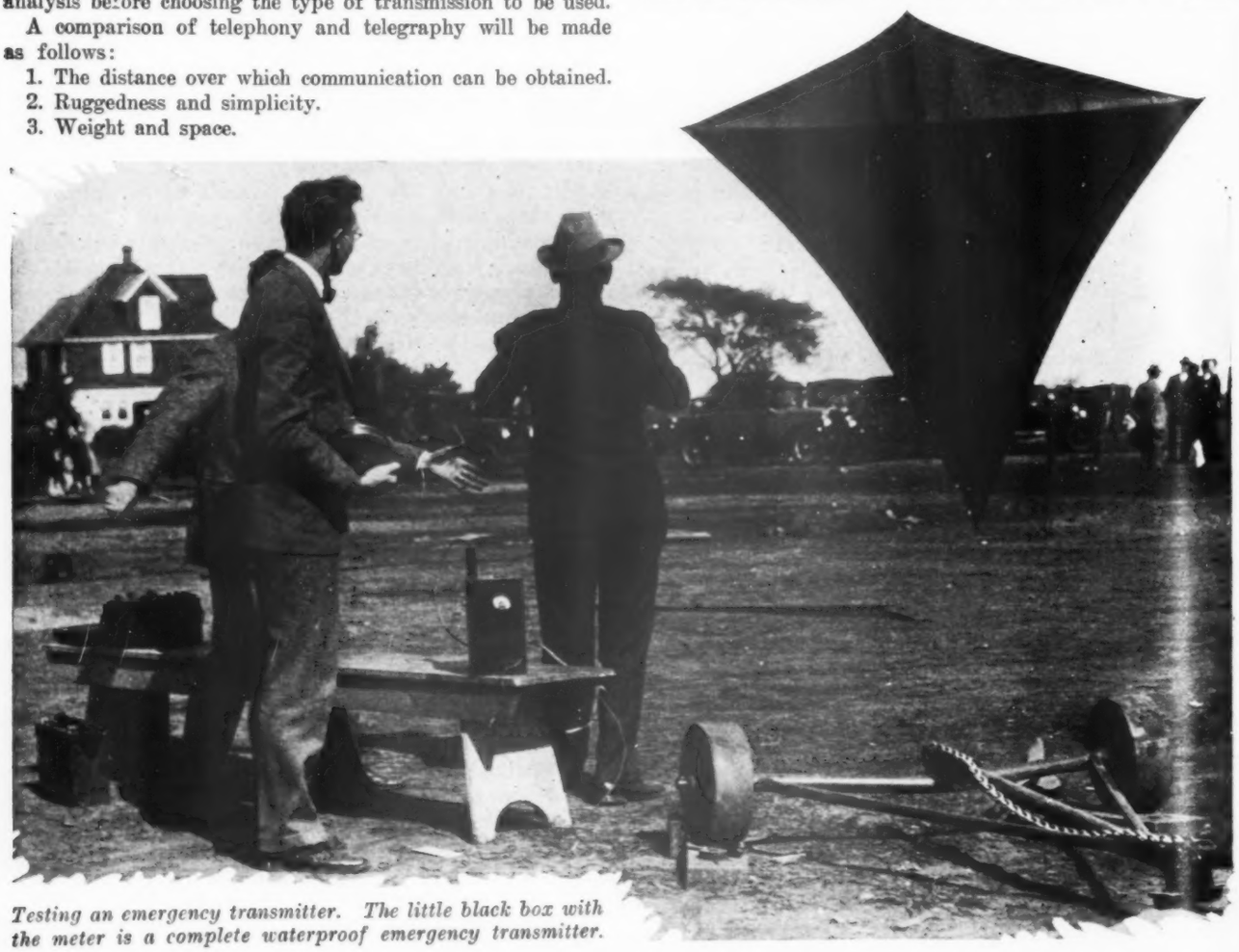
BEFORE SELECTING an aircraft radio set to be used in commercial service a study should be made of the communication problems. The relative merits of telephony and telegraphy will bear thorough investigation. To guarantee that the radio facilities will not fail when vitally needed, there must be an examination of the emergency communication provisions.

At first glance there appears to be everything in favor of radio telephony as the type of communication to be employed in air commerce. Like many a plain maiden, however, radio telegraphy has several desirable characteristics not apparent to the casual eye. It is, therefore, necessary to make an analysis before choosing the type of transmission to be used.

A comparison of telephony and telegraphy will be made as follows:

1. The distance over which communication can be obtained.
2. Ruggedness and simplicity.
3. Weight and space.
4. Cost.
5. Operating personnel.

Research workers of the Bell Telephone Laboratories have found that ordinary conversation to be intelligible demands that seventy per cent. of the speech be heard. To transmit a message with accuracy by telephony requires as high as ninety per cent. audibility of all words. The reader proves this statement every time he copies an address given to him over the 'phone. Now, in speaking the voice has infinite variations. Only at infrequent intervals are syllables spoken which represent "full power" of the conversational voice. Below this "full power" are overtones and harmonics and many syllables of low intensity. These weaker tones are as essential to clear speech as the "full power" sounds. The transmitter, however, must be adjusted by the "full power" syllables. If made to send with best efficiency with the weaker tones the transmitter will make the louder tones mushy and



Testing an emergency transmitter. The little black box with the meter is a complete waterproof emergency transmitter.

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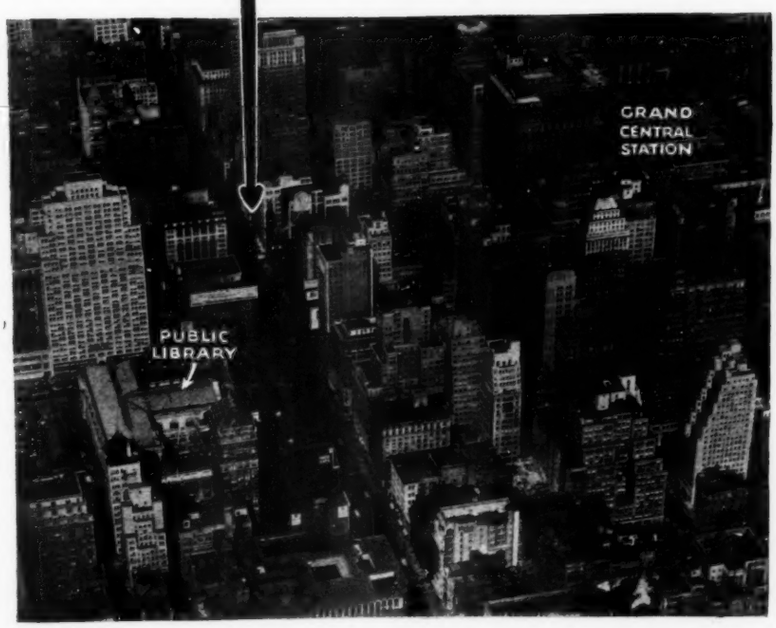

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difficult to understand. It is by the weaker syllables of ten to twenty per cent. of "full power" that range (or distance over which signals can be heard) is determined. Another limiting circumstance in the transmission of speech is that the energy spreads out over a band of waves on either side of the center or assigned wave. Much power is lost in this process and the range is correspondingly reduced.

Radio telegraphy, on the other hand, is always at full power. There are no weak spots. The energy in every dot and dash is at a maximum. Also, in code transmission the power is concentrated on a single wave or, in the case of alternating current transmitters, is contained within a narrow band. This makes for high efficiency and long ranges.

To illustrate—in the older types of broadcast receivers (and some not so old) it was possible to tune in many squeals. If the whistle had great intensity an intelligible program could be found within a degree or two on the dials. Other loud whistles marked stations which were at greater distances or had low power. To attempt the identity of these latter stations by the occasional announcements was a fascinating game which required patience and imagination. A medium sized squeal would mark the receiving point of a program which could never be distinguished at all.

Radio Telegraph Set of Simpler Construction

Squeals are the stuff from which the code signals of the radio telegraph are made. The range of the squeal is the range of the telegraphy, vastly greater than the distance speech can be transmitted.

Noises of any kind, at the ground stations or in the aircraft, seriously interfere with telephone receiving. The voice tones have the same pitch as many interfering noises. Telegraph sets, however, use a high note which penetrates through any but the most severe static or mechanical disturbances.

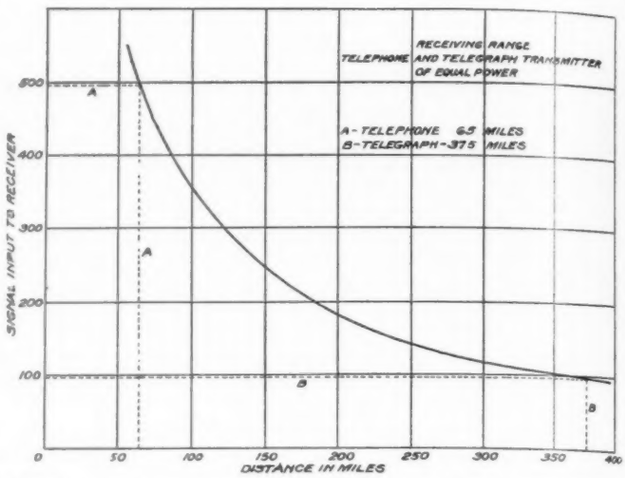
The transmission from a radio telegraph set has, therefore, many times the range of the radiophone, the power of the two devices being equal.

A radiophone has all the elements of a telegraph set plus the additional circuits and vacuum tubes necessary to produce the modulated form of wave peculiar to telephone transmission. For 'phone power supply a high voltage direct current generator is essential as modern vacuum tubes take from 1000 to 2000 volts to operate efficiently. Direct current generators of this voltage rating are subject to frequent failures when made up in the light, compact units required for aircraft work. Small commutators and thin insulation are strained beyond the safe limit.

The code transmitter can utilize lower voltage generators due to the greater ranges inherent to the radio telegraph. The efficiency of the vacuum tubes when used with this low voltage is none too good but will permit fair work. There is, however, a power unit ideally suited for telegraphy which cannot be used for telephony. Telegraph transmitters having properly arranged circuits operate from an alternating current supply. This permits the generation or current at a low voltage. Small transformers located within the radio set step up the low voltage to any potential needed by the vacuum tubes. The A.C. generators are easily built and are extremely rugged.

Thus, by reason of fewer circuits and tubes the radio telegraph set is of simpler construction and less subject to failures. The reliability of alternating current telegraph sets has been demonstrated over long periods of time and under difficult conditions. The best of radiophones and associated high tension D.C. generators have proved to be inefficient and less rugged.

Radiophones weigh more than do telegraph transmitters. Each extra vacuum tube and its connecting circuit adds a few ounces. Extra insulation on the cable is a factor. The balance in favor of the telegraph equipment is only a few pounds but is an appreciable percentage of the total weight. Space requirements do not differ to any great extent, but the code sets, having fewer parts, take up less room.



Graph of relative ranges of telephone and telegraph transmitters of same power.

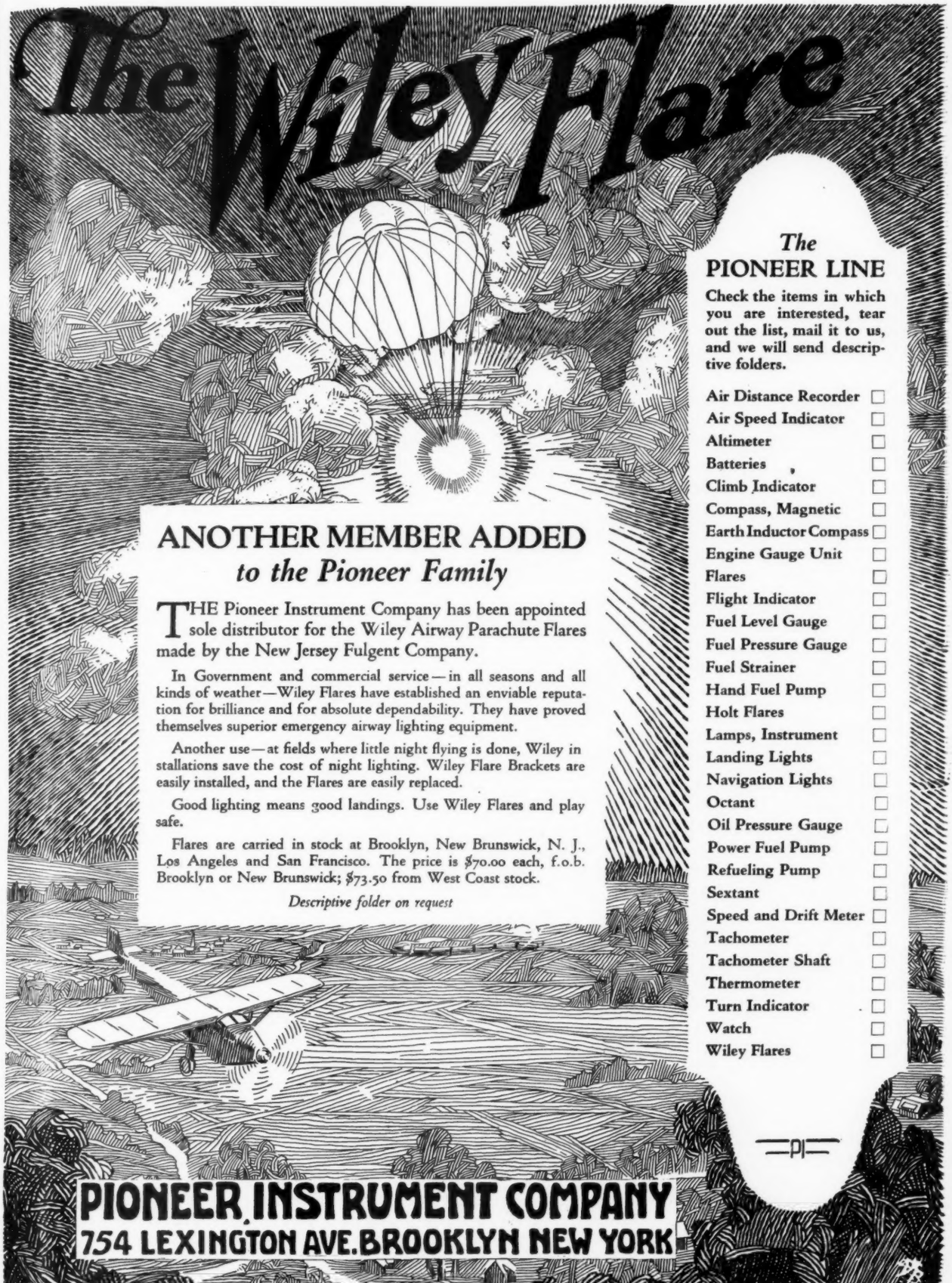
A telegraph transmitter costs less than a radio phone. The difference in generators accounts for much of the differing expense. The initial expense of a radiophone is from twenty to fifty per cent. greater than for telegraphic equipment. Maintenance charges will run in about the same proportion.

Advocates of radio telephony as the means of communication between aircraft and ground stations sieze upon the fifth principle of comparison as the one which will offset the other admitted advantages of the telegraph sets. Stress is laid upon the fact that it takes a trained operator to manipulate a telegraph transmitter while anyone can use a radiophone. That anyone can talk into a microphone is admitted but Federal regulations have something to say as to the qualifications a person must possess to operate any type transmitter.

Infractions of Radio Laws Overlooked

The Department of Commerce through the Chief of the Radio Division has not interfered with the sporadic installations of radio on commercial aircraft. It is the Department's wish to aid aircraft radio wherever possible, and to permit the airline operators to work out their needs with no interference from radio inspectors. Many infractions of radio laws have been and will be overlooked under this broad policy. With the more general adoption of radio by airways operators the radio inspectors will be compelled to require conformity with Federal regulations. Otherwise there would be unwarranted interference with all radio traffic. The first of the regulations to be enforced will be that which limits the operation of any transmitting station, telephone or telegraph, to persons having a license from the Department of Commerce. A license to operate a telegraph transmitter will call for no more knowledge from the holder than will a license to operate a radiophone. Any licensed radio operator must have a certain familiarity with radio practice and must know the radio code. A re-examination of the license holder is made at periodic intervals to assure that he has maintained his proficiency. Under these circumstances the radiophone and the radio telegraph are placed on an even basis so far as personnel are concerned.

Whenever a radio transmitter is to be placed on an airplane the foregoing comparison of telephony and telegraphy should be considered. Each has its place. Where the distance



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Flares are carried in stock at Brooklyn, New Brunswick, N. J., Los Angeles and San Francisco. The price is $70.00 each, f.o.b. Brooklyn or New Brunswick; $73.50 from West Coast stock.

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between ground receiving stations is less than one hundred miles the telephone may be chosen with fair assurance of success. Greater distances make the efficacy of the telephone doubtful. In any event a telegraphic provision should be incorporated in all telephone transmitters to give the extra punch when needed. For instance—on an air route between Havana and Key West (ninety miles) the telephone would serve well on three hundred and fifty days of a year. The other fifteen days will have the unusually bad radio weather for which the Gulf of Mexico is noted. On these days the telegraph attachment will easily maintain communication.

No License is Required

The above discussion has dealt almost entirely with transmitting equipment. Fortunately, a radio receiver suitable for telegraphic work is also capable of telephone reception. It is as efficient for one as for the other. Any difference in receiving results on the two types of transmission is not a function of the electrical action of the receiver but is usually due to (a) the penetrating note of telegraph transmission; and (b) the inefficiency of the radiophone for communicating over distances.

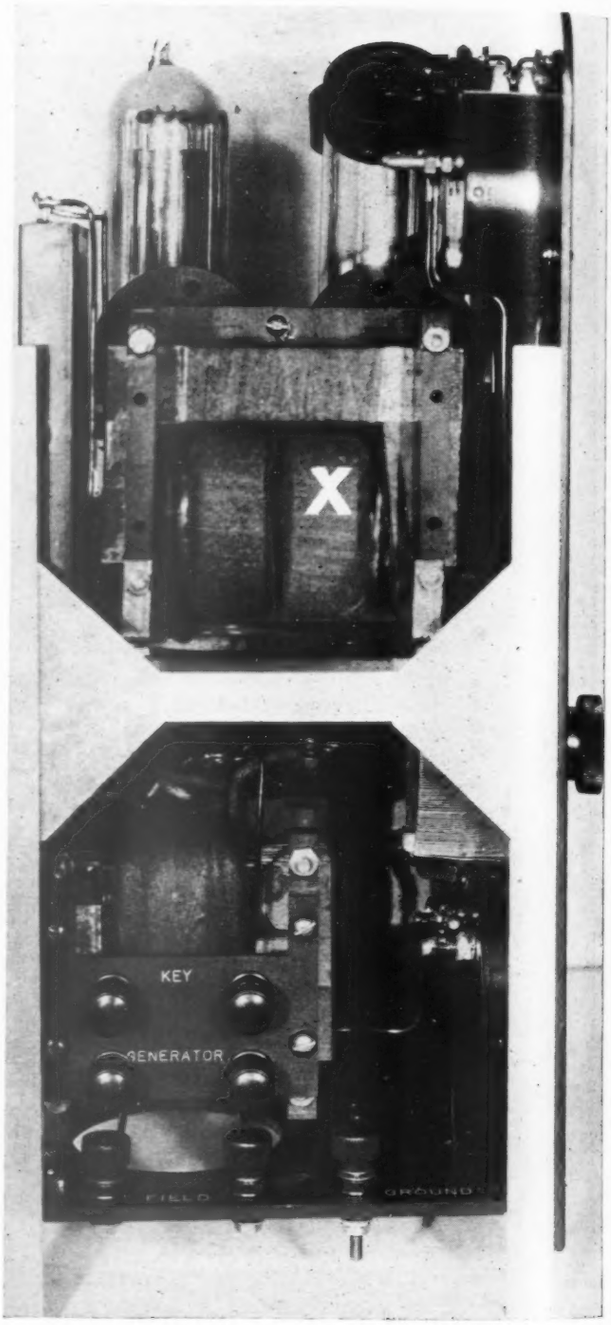
No license is required to operate a radio receiver for any purpose whatsoever. For that reason several air lines are considering the installation of a radio receiver to be used as a means of providing the pilot with weather service and, possibly, with directional indications. The direction finding will be discussed in a later article.

For weather service it is intended that radio telephone signals be broadcast by a ground station and received by the pilot while in flight. The practicability of such a scheme will depend entirely on the power of the ground stations and on the number of stations along the air route. Eventually the Bureau of Lighthouses or municipal governments will provide the ground stations. However several years will elapse before all airways are equipped. In the meantime airways operators who want radio communication will either have to build their own radio stations or arrange with existing broadcast stations for the transmission of the airways traffic. A ground radio telephone station with sufficient power to be of value to aircraft would cost upwards of ten thousand dollars. Stations should be located at least every two hundred miles, if continuous contact is desired. Such an investment is not yet warranted on the longer air routes. On some airways the established broadcast stations might transmit the weather information. The value of such an arrangement is problematical. It would be unfortunate for a storm to become dangerous in the middle of a high class chain program.

Telegraphic Equipment Recommended

There is, of course, a solution within the province of the air lines. A powerful ground radio telegraph station can be constructed for two thousand dollars. Stations of this type need only be located at six hundred mile intervals along an air route or at terminals. The weather information, transmitted by simple code, is received and interpreted very readily even by a novice.

This extensive discussion of the values of telegraph and telephone equipment has disclosed the comparative inefficiency of the radiophone for aircraft communications. Radio distances are at best variable quantities with wide seasonal and daily fluctuations. To be of any real worth the radio transmitters of the aircraft or ground stations must get messages through under any atmospheric conditions. Radio must do for the airways what the telegraph does for a railroad system. Until the airways are equipped by the government with sufficient radiophones of the necessary power (a large program) the operators of airlines who wish to take advantage



An Alternating Current Aircraft Radio Transmitter. Note the transformer X which steps up the low generator voltage to 1800 volts for the large vacuum tubes. Reliable range 500 mi. Weight 23 lb.

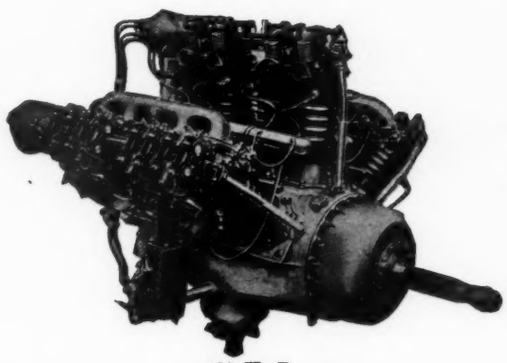
of radio as an aid in the navigation of their craft would do well to use telegraphic equipment and simple code.

In this connection it is of interest to note that European air lines have virtually abandoned the telephone as their chief reliance for airways communications. Telephony is used for short distances or when possible but the telegraphic radio emission carries the traffic when conditions are unfavorable.

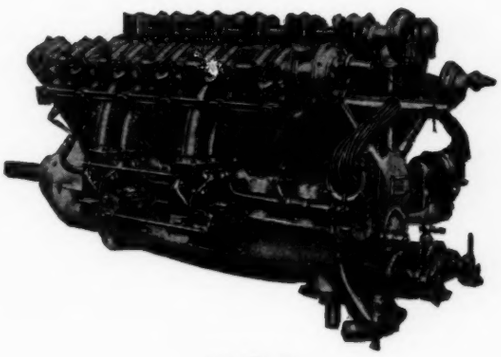
There are several schemes for providing radio transmission from aircraft in an emergency. An airplane equipped with an ordinary transmitter can easily send messages after a forced landing provided the motor is running. However, many forced landings are the result of stalled motors so another source of power seems desirable.

One method is to have a small emergency radio transmitter

LORRAINE-DIETRICH AIRPLANE ENGINES



450 H. P.
Direct drive or geared



650 H. P.
Direct drive or geared

A Result of Vast Technical Experience

Simple design and construction, economical maintenance and great reliability

LORRAINE-DIETRICH engines are the best known and most widely used in the world. Not only have they achieved brilliant records which have received world-wide acclaim, but they have driven and are driving thousands of planes, both civilian and military, through the daily routine which demands so much of an engine and about which so little is said.

Some Notable Lorraine-Dietrich Performances

1925

34,000 miles in 380 hours of flight — Rome-Melbourne-Tokio-Rome, achieved by Colonel De Pinedo in a S. A. V. O. I. A. flying boat with 450 H. P. engine.

New York-Buenos Aires, by Duggan, Olivero and Campanelli, in a S. A. V. O. I. A. flying boat, with a 450 H. P. engine.

1926

3,900 miles in 3 days, by Arrachart and Carol, (Circuit des Capitales), in a Potez XXV, with 450 H. P. engine.

6,560 miles in 6 days, 18 hours, Paris-Peking by Pelletier-Doisy and Carol in a Breguet with 450 H. P. engine.

6,500 miles in 9 days, (9 stops) Tokio-Copenhagen by Captain Botved flying a Fokker with 450 H. P. engine.

4,000 miles in 41 hours 45 minutes, total time, Paris-Rome-Tunis-Casablanca-Paris by Pelletier-Doisy and Gonnin in a Potez 25 with 450 H. P. engine.

1927

15,000 miles in flying boat across Africa by Capitaine de corvette Guilbaud and mechanic Rapin.

Crossing South Atlantic, from Boloma to San Fernando de Norohna, 1600 miles in a non-stop night flight of 17 hours, 30 minutes by Major Sarmiento de Beires.

SOCIÉTÉ LORRAINE-DIETRICH

ARGENTEUIL (Seine-et-Oise) FRANCE

with internal dry batteries. Two disadvantages are found with this arrangement. Dry batteries gradually deteriorate. Seldom used pieces of equipment are always neglected and renewals are forgotten. When urgently needed this type of emergency radio apparatus, unless recently inspected, is liable to fail. Small sets can be operated from the batteries used for lights in night flying or from power furnished by a small hand driven generator. On ordinary wavelengths the range of these small sets with any kind of power supply is so limited as to be of doubtful value. Small short wave sets often are heard for almost unbelievable distances. But no regular distress listeners are located on the short waves. Also, short waves skip over local distances and thus an emergency signal may not be heard at the point from which speedy relief can be despatched.

There is no question but that the best emergency channel is the one on which ordinary communications have been exchanged. The set to be relied on in an emergency is the set which has been used in the handling of traffic in the ordinary routine of flight. In other words, communication is assured if the normal transmitter and the normal wavelength can be used. With this objective in mind several plans are available of which two will be discussed.

Development is being pushed with some success on a separate small gasoline engine which will be used to drive the generator at all times. The French have recently brought out such an engine which is being greeted with enthusiasm by their overseas airline operators (trans-Mediterranean routes). In all probability the future will see the wide adoption of this kind of prime mover for aircraft radio generators. A practicable engine for this purpose has not yet been built in this country, primarily because there is no demand.

Battery Kept Fully Charged

For the present, emergency power can be obtained as follows: The low tension current from a radio generator is used to charge a battery which normally supplies lighting and vacuum tube power. The battery is thereby kept in a fully charged condition at all times. In an emergency the process is reversed and the battery current is made to run the generator from which the high tension current is obtained. Such an arrangement involves no additional weight of importance. It has proved satisfactory in extensive service in England and in modified form in this country.

An outstanding benefit to be derived from having a good radio transmitter on an airplane is that distress messages can be sent off before a forced landing is made. The ill fated "Spirit of Dallas" and "Old Glory" both succeeded in giving notification of impending disaster. Pilots on familiar air routes could, in addition, send their approximate positions.

A summary of the foregoing general communication information follows:

Radio telegraphic transmitters are smaller, cheaper and more reliable than radiophones. Trained personnel are required to operate both devices. Any receiver can be used with either type of transmission. An airplane equipped only with a receiver can obtain weather information from a nearby radiophone station or from distant telegraph stations sending the information in simple code. Airlines not operating on airways having powerful radiophones at frequent intervals should rely on telegraphic service.

For emergencies the main radio transmitter connected to a generator-battery system offers surest means of communication, though other schemes are of limited utility in the absence of normal transmitting equipment.

A fourth article by Mr. Hyland will appear in an early issue of AVIATION.

Planes on Chicago-St. Paul Line to Stop at Madison, Wis.

A REVISION of the contract air mail service schedule running between Chicago and St. Paul and Minneapolis has been announced by the Post Office Department. The revision provides for a stop at Madison, Wis.

The full text of the Department's announcement as made public by the Second Assistant Postmaster General, W. Irving Glover, follows:

Effective November 22, 1927, Madison, Wis., is embraced for supply on CAM-9, on the following schedule:

Westbound—Leave Chicago, 5:50 A.M.; leave Milwaukee, 6:50 A.M.; leave Madison, 7:40 A.M.; leave LaCrosse, 9:30 A.M.; leave St. Paul, 11:30 A.M.; arrive Minneapolis, 11:40 A.M.

Eastbound—Leave Minneapolis, 2:30 P.M.; leave St. Paul, 2:40 P.M.; leave LaCrosse, 4:00 P.M.; leave Madison, 5:45 P.M.; leave Milwaukee, 6:35 P.M.; arrive Chicago, 7:30 P.M.

Frequency westbound, daily except Sunday and Monday; eastbound, daily except Saturday and Sunday.

Laird Aircraft Corp. Building New Four Place Cabin Biplane

THE LAIRD Aircraft Corp., of Wichita, Kan., has recently announced that it is building a four place cabin type biplane powered with a Wright Whirlwind engine. The plane which is to be called the Laird Whippoorwill is reported to be well under way. The organization is headed by Harry D. Cottam, president, a local business man of Wichita; with W. H. Gaskins, ex-war pilot as vice-president; Leva D. Murray, business man of Los Angeles was elected secretary and treasurer. Three other men of Wichita serving as directors are A. H. Hill, A. E. Hurford and Bruce C. Billingsley. The chief engineer and factory manager, Charles M. Laird, is also a director in the new firm.

Visit Curtiss Factory

FIFTY MEMBERS of the General Eastern Passenger Agents Association, composed of passenger agents for most of the railway and steamship lines in the country, visited the Curtiss plant at Garden City last month. The party made a thorough inspection of the experimental factory of the Curtiss Company and then went to Curtiss Field where "Casey" Jones took them aloft in batches of four, to acquaint them with the new method of passenger travel. Edgar S. Barney, president of the association said that while the railroads were not yet actively interested in air transportation, he believed that the time was soon coming when railroad, steamships, and air lines would be cooperatting in the transportation of passengers.

A group picture of the visiting passenger agents and Curtiss Company officials.

FOREIGN AERONAUTICAL NEWS NOTES

By Special Arrangement with the Automotive and Transportation Divisions, Bureau of Foreign and Domestic Commerce

Plan Madrid-Berlin Air Line

General Soriano, head of the Superior Council of Aeronautics, has been in conference with German officials at San Sebastian relative to a Madrid-Berlin air service. According to the International Aerial Convention, Spain has reserved for purely national companies all interior air transportation. This action would limit the line to a route between Barcelona and some frontier point of Germany. The conference is reported to have turned largely upon the question of permitting a capital-frontier, frontier-capital flight thereby enabling a profitable interior traffic. It is said that in the near future a special air convention will be drawn up between Spain and Germany.

The S. A. Iberia Compania Aerea de Transportes has been authorized to establish an air service between Barcelona, Madrid, and Vigo, and Barcelona, Madrid and Seville, to connect with the international service which is planned from Barcelona to Berlin. The new line is authorized to carry out a public service of transportation of passengers and merchandise with aircraft duly registered in Spain, and duly authorized personnel.

International Exhibition in Berlin

An international aeronautic exhibition will be held in Berlin March 23 to April 11, 1928. This may be the most important of its kind ever attempted in Central Europe. The fair will comprise a joint showing of all the important types of commercial, sport and practice airplanes. No mention is made regarding the participation of military or naval planes, either by manufacturers' exhibits or in exhibition or competitive flights. There will also be booths at the exhibition for manufacturers of airplane engines and accessories of all kinds. Everything pertaining to aeronautics will be on exhibit, including raw materials, semi-manufactured goods and engine fuel. Aeronautic schools and publishers of aeronautical magazines will be represented. In the partitioning of the exhibition space, the authorities state that absolutely no partiality will be shown, and that foreign exhibitors should be allowed to exhibit on the same basis with the German concerns. The fair will also include all kinds of exhibition flying, and competitive flights are being arranged. Complete information regarding the participation in the fair may be obtained from Ausstellungs-Messe-und Fremdenverkehrsamt der Stadt Berlin.

Rio-Lisbon Flight Proposed

A prize of $120,000 is offered in a bill now before the Brizilian Congress for a round trip flight between Lisbon and Rio de Janeiro. The flight is open to Brazilian or Portugese fliers making the first round trip flight with stops at Lisbon, Porto Praia, Pernambuco and Rio de Janeiro within 96 hr. and with a plane and engines of Latin manufacture.

Italian Tablet for American Pilots

A bronze tablet was recently unveiled by Mrs. William H. Schofield, of Peterborough, N. H., in the Cathedral Foggia, Province of Puglie, Italy, in memory of her son James C. Schofield and other American pilots who lost their lives at the flying field near that place during the World War.

The R-38 Prize Awarded

The R-38 memorial prize, offered annually for the best paper received by the Royal Aeronautical Society on some subject of a technical nature in the science of aeronautics, has been awarded this year to Wing Commander T. R. Cave-Brown-Cave, for his paper entitled "Safety from Fire in Airships."

To Establish Airport at Rio

The port inspector of Rio de Janeiro, Brazil, has reported to the minister of transportation that it will be practical to use the land of Manguinhos at the head of the bay for the construction of an airport. It is planned to install on this field hangars and other accommodations for both sea and airplanes.

Plan Newfoundland Air Mail Service

It is reported that air mail service between Newfoundland and the United States will be established within a year. This will include taking mail from steamships off the Newfoundland coast, transporting it by fast motor boats to Harbor Grace and then by airplane to the United States.

New Honduras Airplane Service

One of the large American fruit companies on the north coast has recently purchased a six-passenger airplane in the United States primarily to establish a private service between Tela and Tegucigalpa. It is probable that a certain amount of public passenger and mail service will also be rendered.

German Concern Contracts with Luft Hansa

The I. G. Farbenindustrie has concluded an agreement with the Luft Hansa, arranging for the transportation of merchandise by planes owned and operated by that company. Goods have frequently been transported by air in Germany, but this is the first instance of a regular contract having been signed, by which the above chemical concern obligates itself to forward, within a given period, a certain amount of freight by air.

Paraguay-Buenos Aires Air Service

Air mail and passenger service between Paraguay and Buenos Aires has been proposed by an Argentine company, under the management of Senor Marcel Bonilloux Socfont. Pilots have been engaged with the expectation of inaugurating the service before the first of the new year.

Airport for Horta

Horta, situated on the Island of Fayal, in the Azores, will have the first mid-ocean airport, if plans, which are now under consideration, materialize. A hangar and a meteorological station have already been established.

Side Slips

By ROBERT R. OSBORN

There certainly must be some fearful and wonderful things going on in California aviation circles, and we intend investigating carefully before we do any more joshing about some of the seemingly impossible aeronautical accomplishments noted in the newspapers out there. Mr. W. A. S. writes to us from San Francisco as follows, "Thought you might be interested in the following excerpt from a letter which I have just received, applying for insurance on an airplane model. The broker states, 'I have a client who is building a Curtiss airplane model, on which he is trying to invent *air pockets* that would hold the plane in the air while a mechanic could repair any trouble or defect which might arise while the plane is in flight'."

Possibly those California aviators who have been repairing landing gears and overhauling engines in flight really had plenty of time in which to do it after all.

We do hope though, that when our mechanics get doing this aerial repair work as a regular thing, they will not start insisting on an eight hour day. Think of the possibilities if they dropped all of their tools and came down by parachute when the five o'clock whistles blew, leaving pilot and passengers depending on the air pockets all night.

• • • •

Mr. T. H. H. sends from Philadelphia a clipping from a local paper, showing a photograph of the new airplane carrier which has just been launched. Part of the descriptive matter states "Another striking feature is the ship's top or flying deck, 888 feet long, for the use of seaplanes of which the ship can carry more than four score."

This certainly will prove to be a "striking" feature, if any of the four score seaplanes do attempt to land on the deck.

• • • •

Mother Goose up-to-date—

Four scores of seaplanes,
Flying around in line.
One landed on the deck,
Leaving seventy-nine.

• • • •

A recent visitor to the United States from Germany is supposed to have brought over samples of a new metal alloy which is as light as aluminum and three times as strong as steel. Apparently the news has reached Germany that the winning poem submitted in a recent contest for poetry on Lindbergh's flight, was entitled "Wings of Lead."

• • • •

Mr. H. M. L. notes, in an article in a Kansas paper concerning the inauguration of night flying on the Kansas City-Dallas mail route of the N.A.T., that "Installation of *roving* beacon lights at intervals of every ten miles along the 1000 mile route is near completion."

These beacons would be just the thing for a line such as might be started by one of our famous trans-Atlantic fliers. The one we have in mind is the chap who intended to fly from England to America but went to India instead, as weather conditions were better in that direction.

• • • •

A friend of ours who used to be a mechanic with the air mail in the early days of that service, tells a story which illustrates very well the flying conditions which have come to be taken for granted by the pilots. He saw one of the pilots at a field the other day, not having seen him for a number of years. He went up and shook hands, asking the flier if he remembered him. "Surely I do," he said, "and I've been wanting to ask you all this time if you ever found your way back to the hangars that very foggy day that you turned me loose in the middle of that field."

• • • •

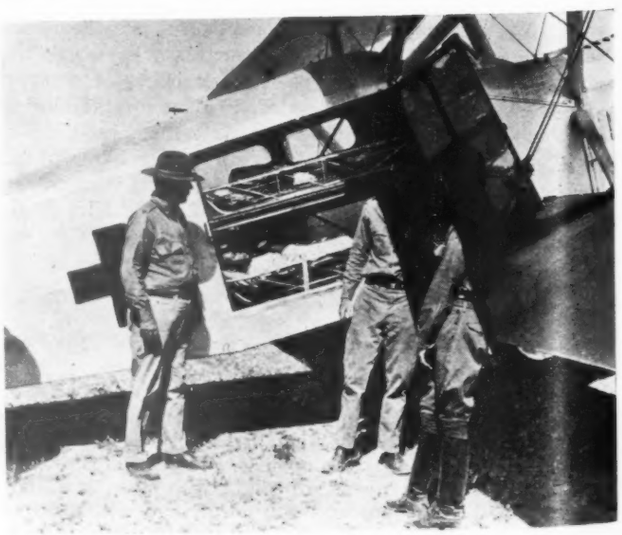
The Intrepid Aviator was in to see us again the other day and told us that he had increased the rate for pleasure flights out at his field. It seems he had decided he was working for too little money after reading in the "Air Service News Letter" of the qualifications necessary for a successful pilot. According to Captain Lynd, Director of Ground School at Kelly Field, the requirements are "The innate faculty of selective and instinctive discrimination of the stimuli of the sensori-motor apparatus to harmoniously adjust metabolic changes in physiological and psychological equilibrium in such a manner as to comprehend and assimilate instruction in the attributes necessary to perform the intricate and complex operations which comprise the piloting of aircraft".

The Intrepid Aviator hasn't figured this all out yet, but says that unless the Department of Commerce forces him to do something about it, he intends to continue his flying in the good old-fashioned way.

• • • •

There was an incident we have been forgetting to mention, which occurred shortly before the start of the New York-to-Spokane races, and which illustrates the old adage that some of the most interesting news is that which might have happened. One of the pilots who had just flown in from the west and landed at Curtiss Field, told us that he had intended landing at the adjoining Roosevelt Field, but there had been such a large crowd there in the grand-stands that he changed his mind and came in to Curtiss. As the crowd he mentioned was watching the International Polo Championship matches, which were being held at another adjoining field he certainly spoiled a wonderful news story by not landing there.

Air Ambulance at Kelly Field



Since the Cox-Klemin airplane was delivered from McCook Field, to Kelly Field, it has established a record for emergency medical missions. To the end of August 1927, this plane had carried a total of 23 patients, made 26 emergency flights, and was 39 hours in the air.

AIRPORTS AND AIRWAYS

Philadelphia, Pa.

By Ray Krimm

Two Pitcairn Mailwings, PA-5, with Wright Whirlwind engines, have been sold by Pitcairn Aviation, Inc., to the Colonial Air Transport, Inc., for use in the New York-Boston night air mail service.

Pitcairn Aviation, Inc., flew Santa Claus from the Philadelphia Navy Yard to Pitcairn Field, in a Pitcairn Orowing PA-3, OX-5 engine. He was taken from the field to a downtown department store.

Pilot A. M. Banks, of the Pitcairn organization, tested five new Pitcairn Mailwings at the field and found they operated satisfactorily.

Robert P. Hewett, manager of field operations at the Philadelphia Airport, has announced that the Ludington company has taken 3,000 passengers on short flights at the field since June 1. This does not include inter-city, long distance or special flights. The flights were made in Waco-9s and 10s and in a five-place Fairchild cabin monoplane.

Landing Fields Increase

A survey recently completed revealed that Pennsylvania has fifty-six landing fields for aircraft.

The fields are scattered throughout the state's sixty-seven counties. Three are in or near Philadelphia and three others are in the Pittsburgh area. In 1925 the state had only ten airports.

Work has been started on a map showing the location of the fields, their proximity to larger towns and highways, and their location in relation to railroad lines furnishing local contact with the airports. Fields used by the United States Army, the Air Mail Service, and those owned by municipalities or operated by private concerns are included.

Lieut. Earl J. Carpenter, Air Corps, United States Army, attached to the 103rd Observation Squadron, Twenty-eighth Division Air Service, Pennsylvania National Guard, at Philadelphia, addressed the newly-organized University of Pennsylvania Aviation Club recently and told club members the requirements for Army aviation cadets.

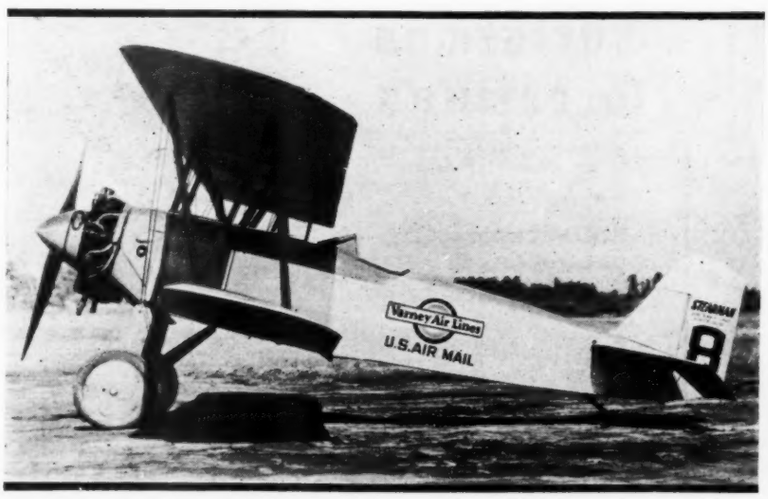
The club, containing one member with nearly 400 hours of solo flying and another member with 200 hours, has tripled its original membership of last month and now has nearly 100 members, many of whom will take the examination for aviation cadets.

Requirements for membership are: The student must show sufficient interest in aviation and make an oral or written report on some phase of the subject, telling also why he would like to be admitted to membership.

The club has written to the Harvard University Flying Club, a three-year-old organization headed by Rodney H.

Quite Often the Little Things Count

IN the STEARMAN - the tubing is protected against corrosion on the inner surface as well as the outer - the steel fittings are cadmium plated - the vital bearings are "Alemite" lubricated and the tachometer shaft, switch wires, temperature and oil pressure lines are carried in conduits.



The Stearman Whirlwind Mail Plane

STEARMAN AIRCRAFT HAVE A PERSONALITY.

The Stearman Aircraft Co., Wichita, Kansas

Jackson, for results of that club's work. Harvard students will speak at a U. of P. meeting soon.

During a meeting at Harrisburg, the Public Service Commission of Pennsylvania received applications for the incorporation of four aerial transportation companies. They are the Gettysburg Flying Service, of Gettysburg; the Noble Aircraft Company, of Pottsville; the Reading Airways, of Reading, and the Pennsylvania Aerial Transportation and Express Company, of Wilkes-Barre.

The commission's attitude was favorable toward the aviation industry in this state, the commissioners indicating that private interests will have full opportunity to develop commercial aviation.

The commission, however, indicated that inasmuch as these were the first applications for aviation service to come before that body, they would feel their way cautiously, regulation of aerial common carriers being a phase of public service on which the commission desires to become better informed.

The Gettysburg Flying Service and the Reading Airways, two of the applicants, told the commission they were ready to begin operations immediately. The Noble Aircraft Company and the Pennsylvania Aerial Transportation Company announced they would start operations within a few months, if their applications are approved.

The Wilkes-Barre promoters laid an ambitious program before the commission. They contemplate the establishment of regular service between Wilkes-Barre and cities in the east, south and west, using planes carrying six and eight passengers in addition to the pilot. Passengers, freight and mail will be carried. Little, if any, sight-seeing work is contemplated.

Flying two Pitcairn Orowings (PA-3 with OX-5 engines), pilots Sterling Smith and J. W. Shaffer left Pitcairn Field, Pa., near Philadelphia, recently, for Candler Field, Atlanta, Ga., to establish operations for Pitcairn Aviation of Georgia, Inc.

With Smith and Shaffer were Edward S. Barringer and J. B. Hand, Pitcairn mechanics. At the same time, Ben Faulkner, manager of Pitcairn Field at Hallowell for the past year, left by train for Atlanta to take over his new duties as manager of Pitcairn operations at Candler Field.

Pitcairn Aviation of Georgia, Inc., a subsidiary of Pitcairn Aviation, Inc., Philadelphia, will start operations immediately. Passenger carrying, general taxi flights and flying instruction will be undertaken under the direction of Mr. Faulkner and his staff of four men.

Under an agreement with the City of Atlanta, the Pitcairn interests have promised to make an investment of $12,000 at Candler Field. A hangar has been erected by the Pitcairn organization and the city has started the installation of boundary and field lights.

When the New York to Atlanta air mail service is inaugurated early next year, the Pitcairn operation at Candler Field will serve as the southern terminus of the line, the Pitcairn company having been awarded the government air mail contract. The New York to Atlanta service was to have been started this fall, but the government's inability to complete its lighting of the air route forced a postponement until next year.

Although no definite date has been set, the government expects to complete its lighting installations by March 1, the Pitcairn organization has been notified.

Dr. Pratt, of the Bureau of Standards, is working on the construction of three airplane radio sets, which will be installed in Pitcairn Mailwings to be operated over the New York-Richmond section of the New York to Atlanta air mail service.

Announcing plans for the installations, W. Laurence Le-

Christmas Greetings
Meyrowitz sends best wishes to the aviators of America in appreciation for their continuous confidence in
Meyrowitz Luxor Goggles
Used exclusively by a majority of the commercial, Army, Navy, Marine corps and private fliers.
A most acceptable gift for Christmas. A pilot never has too many goggles.
E. B. Meyrowitz
Est. 1875
INCORPORATED
520 Fifth Avenue, New York

Page, of Pitcairn Aviation, Inc., said: "While it may be expected that, in the not distant future, the radio beacon and other radio service will be available over all the air routes of the country, such facilities cannot at this time be secured upon a large scale.

"In view, however, of the fact that there is already a radio beacon installed at Hadley Field, New Brunswick, and another being operated by the Bureau of Standards for experimental purpose at College Park, Md., it is planned to provide the Pitcairn Mailwings to be used on the New York to Richmond run with radio equipment so that pilots flying over this section of the route may have the advantage of radio guidance.

"The experience obtained there will prove of considerable value in extending this service to the Richmond-Atlanta section at a later date."

Thirty-six planes of Pitcairn Aviation, Inc., and its associated companies carried 20,224 passengers from Jan. 1, 1927, to Nov. 27, according to a report just announced by W. Laurence LePage.

The passengers were carried by Pitcairn planes at Pitcairn Field, Hallowell, Pa., near Philadelphia; the Richmond, Va., Municipal Airport; the Greensboro, N. C., Municipal Airport; the Spartanburg, S. C., Municipal Airport, and at Candler Field, Atlanta's airport.

The 20,000-odd passengers were in charge of nineteen pilots, including Pitcairn reserve pilots. Most of the flights were taken at Pitcairn Field, Hallowell, Pa., and although no record was kept of miles covered, the mileage between June 1 and Oct. 31, when a temporary record was kept, totaled 165,760.

The figures announced by Mr. LePage do not include taxi flights or long distance trips. They reveal that during 1927 the Pitcairn organization more than doubled its passenger-carrying record of 1926, when 10,000 persons were taken for short flights in the company's planes. Of that number, 2,300 flew at the Sesqui-Centennial here and at Ocean City, N. J.

Noel Davis Trophy Awarded

The bronze plaque to be known as the Noel Davis Trophy, presented to the Navy Department by Harry F. Guggenheim, president of the Daniel Guggenheim Fund for the Advancement of Aviation, has been awarded to the VT-30 Squadron, this city. The trophy will be awarded annually to the Naval Reserve aviation unit attaining the highest rating, the Philadelphia unit having received that distinction during 1927.

The trophy will be received on behalf of the Philadelphia unit by Lieut. Comdr. Robert S. Hedtler, U.S.N.R.F.

The PN-11, the giant seaplane with a flying radius of more than 3,000 miles, now under construction at the Naval Aircraft Factory, Philadelphia Navy Yard, will not be completed until spring, according to Comdr. Ralph D. Weyerbacher, head of the factory.

Recent dispatches from Washington said the Navy's new plane was ready for flight, but Commander Weyerbacher has explained that detailed plans, and not the plane, have been completed. Parts of the new plane are being tested now.

The PN-11 will be of a type similar to the PN-10, which the late Comdr. John Rodgers used in his famous attempt to reach Honolulu from San Francisco. It will be larger than its predecessors, lighter in construction, and will have a much larger cruising range.

The Bureau of Aeronautics will open bids in December for the construction of twenty-five planes to be known as the PN-12. They will be equipped with air-cooled engines.

The PN-11 is a biplane with a large wing spread. The upper wing is of a semi-racing type and the lower wing is

The AIRSEDAN

Safety

Built under Department of Commerce Certificate of Airworthiness **No. 12.** *Approved for* **1000 lbs.** *pay load.*

INSURANCE

Full coverage will be granted for all passengers, because they cannot interfere with the controls.

SPECIFICATIONS

Seating Capacity	pilot and 4 pass.
Weight Empty	2100 lbs.
Wing Area	320 sq. ft.
" Span	42 ft.
High Speed (sea level)	120 M.P.H.
Engine,	Wright Whirlwind

EQUIPMENT

Self Starter, Metal Propeller, Compass, Air Speed Indicator, Navigation Lights, Tachometer, Altimeter, Clock, Fire Extinguisher; Fuel, Oil Pressure and Oil Temperature Gages; Air Corps Throttles, Strainer, and Fuel Valve, Exhaust Manifold with Muffler and Cabin Heater, Metal Mail or Baggage Compartment.

The Ideal Commercial Plane

Price $12,500 Flyaway
Completely equipped

BUHL AIRCRAFT CO.

Marysville, Michigan

of the R.A.F. type. The combination has been found to give great speed and stability.

Pittsburgh, Pa.

By Ray A. Tucker

The Joint Luncheon Clubs Aviation Committee composed of thirty members, three representatives from each of ten local luncheon clubs, has just inaugurated its program for the public survey for a large Pittsburgh airport. Part of the survey data distributed was a specially prepared map of Allegheny County covering a radius of ten miles from the center of Pittsburgh. The county is divided into ten equal sections, with each club assigned to a section for survey purposes. In addition to the map, a list was distributed, of essential requirements needed in searching for an ideal airport location.

At this meeting, Lieut. Leigh Wade, Round-the-World flier, was a guest and addressed the gathering upon the subject of "What Are Aviation's Present Needs". Specially invited guests to this meeting were officers of the Aero Club of Pittsburgh, and aviation lighting engineers from the Westinghouse Electric & Manufacturing Company.

Gettysburg, Pa.

The Gettysburg Flying Service, the first aviation company to apply for a state charter in Pennsylvania, has carried more than 2,000 passengers on short flights over the 2,500 acre battlefield. Lieut. Lowell S. Harding and Paul Charles are pilots for this company. Three large Alexander Eaglerocks constitute the flying equipment.

The Gettysburg Airport covers 60 acres. It is situated on the old Forney farm, Oak Ridge, on the historic battlefield and is near the Lincoln Highway, at the hub of a network of good roads. A club house with spacious quarters for men and women serves as an entrance to the field.

Teterboro Airport, N. J.

Figures on air traffic for the month of October, just compiled, show that 22 planes arrived at the airport, which is situated at Hasbrouck Heights, N. J., and 21 left for other points in the United States. These planes carried 43 pilots and 30 passengers.

Among fliers who used Teterboro were Colonel Lindbergh, Brock and Schlee, Chamberlin and Balchen.

In addition to these cross-country trips, 1,688 passengers took short joy-rides with the Gates Flying Circus and Colonial Air Transport.

Camden, N. J.

A 4,000,000 candlepower beacon, on top of a 55-foot tower, has been erected on city property at Harrison Avenue, between Twenty-seventh and Twenty-eighth Streets, by the United States Department of Commerce.

The light designates the Moro Philips tract, Camden's intermediate landing field, and is expected to prove invaluable to pilots when the New York-Atlanta air mail service is inaugurated next year.

Three lights are mounted on top of the tower, which is of light steel construction. The strongest beam is tilted upward and the other two illuminate the vicinity, their beams being turned downward at an angle of about 45 degrees.

During the day, a flier can obtain his bearings by an 11 by 55 foot concrete arrow on the field, pointing in the direction of New York City. The tail of the marker designates the direction of the last station.

Clarence D. Chamberlin, New York to Germany flier, has made a series of inspection trips to the Moro Philips tract

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on East State Street and, during his most recent visit, told city officials he favors its location over Manhattan and Brooklyn as a site for his proposed airplane factory.

Chamberlin said he would probably agree to locate here if the Camden City Commission provides in some way for the purchase or rental of the Moro Philips tract as a municipal airport. His attitude was made known to friends in Camden after he had spent two hours in conference with the Camden City Commissioners and with members of the Aviation Committee of the Camden Chamber of Commerce.

In his latest visit here, Chamberlin was accompanied by State Senator Charles Lockwood, of New York, his financial backer.

"One of the strong points of the Moro Philips tract as an airport site," said Chamberlin, "is that you can land on the field in Camden, step into an automobile, and be in the heart of Philadelphia in twelve minutes."

The proposed Camden airport at East State Street has 150 acres of level land in splendid condition and ready for immediate use, according to George B. Robeson, chairman of the Aviation Committee of the Camden Chamber of Commerce and former traveling companion of the late Captain Nungesser when he toured the United States in 1925.

Last year an aviation meet and exhibition was held on the field. Thirty-five planes participated and there was room for fifty more, Mr. Robeson said.

Portland, Ore.

By John W. Anderson

A new unofficial altitude record for OX5 engined planes with three occupants was set recently over the Vancouver, Wash., airport by a Bell Air Line plane piloted by Basil Russell. The altitude reached was 13,500 ft., 1,200 ft. higher than the mark set by Tex Rankin over Portland. The record is unofficial because no barograph was carried, as required by National Aeronautical Association.

John R. Allen, an official of the Bell Line, and Harry Steinfeldt, aviation editor of the Portland News, accompanied Russell on the flight.

The plane climbed through fog to make the record. At the 10,000 foot point ice appeared on the wings reaching a quarter inch in thickness before descent was started. The pilot said he would have gone higher but for the ice and heavy winds encountered at that altitude.

The plane used was an Eaglerock biplane. It was the same stock model that won the Class B race between Spokane and Portland last September.

Winds blew the plane about 20 miles up the Columbia River during the flight.

Local fliers are making a sort of contest of this altitude record-setting. Others expect to have a try at Russell's record soon.

H. A. Speer, sales manager of the International Aircraft Corporation of Long Beach, Calif., and Cleveland, O., visited Portland recently while on a Northwest survey of aviation conditions.

Portland's newest flying school is being organized by the Mackenzie-Goff Company. The first plane, an American Eagle Aircraft Company biplane, has been flown here by Lieut. A. B. Mackenzie, Army Reserve Corps, who will be chief pilot of the new organization. Ground instructions will be given by A. L. Adcox. Temporary hangars are being built to house the school until the Port of Portland Airport is ready for use.

Lieutenant Mackenzie will try to break Russell's OX5 record soon, he has announced.

Ben Ostlund, president of the Coos Bay Veneer and Box Company of Marshfield, Ore., is a flying student at the

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Rankin school here. He has just returned from a tour of Europe during most of which he traveled by air.

A branch flying school in Hood River, Ore., was opened recently by the Bell Air Line. I. C. "Hap" Roundtree and Alfred Davis are instructors. Ten students have already enrolled. The school is using the municipal airport. The company will operate a seven-passenger Eaglerock plane there.

An Eaglerock agency for four counties in southern Oregon has been established by Howard Fowler and Arthur Long at Medford, Ore.

The Hill Military Academy has also opened an aviation school, with Lieut. Gordon F. Mounce in charge and 30 students enrolled for the opening class. Lieutenant Mounce will have two assistants and Travel Air planes will be used.

Aviation activities are expected to take on a more lively aspect with the completion of the Port of Portland Airport. This field was formerly Swan Island in the Willamette River and when it is finished it will become the local headquarters of the Pacific Air Transport Company. The flying school at Vancouver, Wash., will also be moved here.

The first of 10 tri-engined Bach monoplanes, which next spring will be carrying passengers between Seattle and Los Angeles, has logged its route between Portland and Seattle. This plane will be placed into daily passenger service about Dec. 15, making a one-way stop at Tacoma. The West Coast Air Transport Company, formed recently by officials of the Pickwick Stages, Inc., will operate the new line. Charles V. Eakin is president.

The Bell Air Line, a subsidiary of the Bell Stage Line, contemplates the purchase of seven cabin Eaglerock biplanes for the service it plans to put into operation next spring. This company is Oregon agent for the Alexander Eaglerock planes. Its officers are A. T. Shere, president; Jack Parshall, sales manager; Basil Russell, chief pilot, and I. C. "Hap" Roundtree, instructor. This company is sponsoring the flying school at Vancouver, where thirty students, including two girls, are enrolled.

Tex Rankin has announced plans for a new ground course at the Rankin School of Flying, located on its own field at the city's edge. The course will include 12 allied aeronautic subjects. Lieut. Basil Smith will be in charge of the classes. There are 123 students enrolled at the Rankin school.

Senator Charles L. McNary of Oregon has promised to assist the Hill Military Academy in its attempt to obtain airplane engines and parts from the government for instruction purposes in the new Hill aeronautic school. Gordon Mounce, chief pilot of the school, has returned from Wichita, Kan., with a new Travel Air biplane for use in the institution.

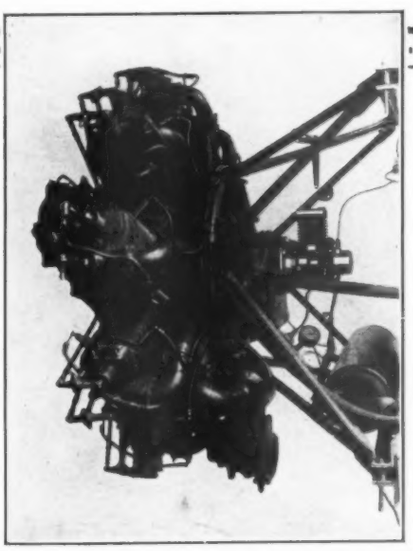
Springfield, Mass.

By Charles Hanson Gale

Dunn Field, at Longmeadow, has been definitely abandoned as a site for the proposed Springfield Municipal Airport. The committee announced that it is open to suggestions for possible sites, and will give those already proposed serious consideration.

The committee gave as its reason for abandoning the consideration of Dunn Field its susceptibility to flooding from high water, as demonstrated in the recent flood. Flying operations at Dunn Field are far from over, however, and the field will continue to be used as the base for the Springfield Airlines Company, of which Harry J. Hermann is president and chief pilot.

The first class graduated from the Springfield Ground School recently. The class comprised about 20 students. The class advanced to the airplane section of the course the week following graduation from the ground school, while another



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class in engines began meeting on alternate nights with the first group. A large number signed up for the second engine course, some of whom had waited several weeks after applying.

New equipment recently added to the school by Lieutenant Hall includes a welded steel fuselage of modern construction, high lift wings, another OX-5 and a Standard biplane, with a Hisso engine.

Harry J. Hermann will revisit the scene of one of his old flying schools, when he takes his wife and daughter "Jackie", to Lenoire, N. C., for Christmas. Harry was located at Lenoire until he came here last spring to start his company, which has had such a successful season at Dunn Field. He will travel in his new motor car. Harry recently delivered another plane to Lieutenant Mather of Hartford, who has six more Swallows on his order still to be delivered.

The Massachusetts Airways Company recently announced that it will place an order for 20 Eaglerocks with the Alexander Aircraft Co., for delivery in April, May and June. Joseph Boltrum, of Northampton, who recently bought a plane from the Airways company, and who has placed an order for one of the planes to be delivered next year, will be the Hampshire County agent for the company. He will also engage in commercial work.

Lieut. H. L. George, of the Army Air Corps, scheduled to deliver a lecture to members of the local chapter of the officers reserve corps, was forced by weather conditions to leave his plane at Mitchel Field, and complete the trip by train. He gave a lecture illustrated by moving pictures of Air Corps activities in Texas and off the New Jersey coast.

Maurice F. Reidy, president of the Massachusetts Association of Real Estate Boards, addressed local business men at the Central high school recently on the part aviation and airports are to play in future real estate conditions.

Geneva, N. Y.

By E. E. Snelgrove

The chairman of the committee appointed by the common council of the city to investigate the acquisition of the present privately-owned and operated field for a municipal airport has advocated a lease on the Finger Lakes Airport, rather than purchase.

A number of factors entered into this recommendation, such as the large expenditure necessary, legal difficulties encountered, and the refusal of the owner of 30 of the 62 acres to sell his piece of property.

The present ten year lease of the field is held by Spencer M. Prunnett and Charles A. Wetheren.

Action on entering into a lease was deferred until the legal aspects of the case can be clarified and also definite knowledge secured as to the necessity of obtaining the consent of tax-payers through a special referendum for the expenditure of the money to take over the lease from Prunnett & Wetheren.

Rochester, N. Y.

By Joseph F. Farren

The Rochester Flying Club had its annual business meeting and election of officers recently, with Hubert J. Sargent, vice-president of Sargent-Baker, Inc., auto dealers, elected as president. Mr. Sargent succeeds Dr. Joseph B. Loder. Other officers elected were: first vice-president, Gordon A. Taylor, head of North Star Aerial Service Corporation; second vice-president, Warren M. Brizee, owner of Brizee Aviation Field; secretary, Joseph F. Farren; treasurer, John H. Neuert, of the New York State Railways.

Harry C. Wardell and Dean A. Anderson were elected to the Executive Board, and Otis Y. King was appointed assistant secretary. The club announced that it will purchase a plane the first of the year for membership instruction.

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Wisconsin—Hall Aircraft Co., 101 Scott St., Wausau, Wisconsin
W. Mo. and E. Kan.—Bennett Eaglerock Sales Co., 223 W. 12th St., K. C., Mo.
Okla. and Tex. Pan.—Southwest Airways Corp., Route No. 5, Oklahoma City, Okla.
N. M. & Cen. Texas—Browning Airplane Sales, Wichita Falls, Tex.
S. Tex.—Marion P. Hair, 403 E. Josephine St., San Antonio, Tex.
So. Cal. and Ariz.—Aero Corporation of California, Western Ave., at 99th St., Los Angeles
Northern Calif.—Jas. L. Mayberry, Menlo Hotel, Oakland, Calif.
W. Washington—Story Eaglerock Sales, 409 No. Yakima, Tacoma, Wash.
Wyo. and Mont.—Wyoming Airways, Inc., Casper, Wyoming
S. Dak. & N. Dak.—Rapid Air Lines Inc., Rapid City, S. D.
E. Neb.—Steele Airlines, Inc., 717 Union State Bank Bldg., Omaha, Nebr.
La.—Louisiana Airways, 1712 Pere Marquette Bldg., New Orleans
W. Va. and E. Ohio—Lyle H. Scott, 328 2nd St., Marietta, Ohio
Utah—Rocky Mountain Airways, Salt Lake City
Arkansas—Tri-States Airways, Bry Block, Memphis, Tenn.
Maryland and E. Pennsylvania—E. W. Robertson, Alexandria, Va.
So. Carolina—Errett Williams, Spartanburg, S. C.
Me., N. H., Vt., R. I. and Mass.—Massachusetts Airways Corp., 1597 Main St., Springfield, Mass.
W. Penn. and N. E. Ohio—Morris Flying Service, Pittsburg Airport, Pittsburg, Pa.
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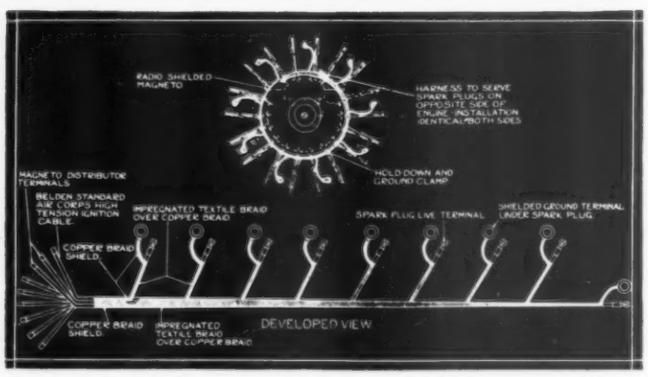
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Schenectady, N. Y.

Construction work, under direction of William E. Arthur & Co., Inc., progresses. Three runways are finished and the first hangar is completed and in use. The installation of lighting equipment is under way, the wiring for boundary lights completed and the beacon ready for use. Victor A. Rickard, head of the Inter-Cities Airways, has been appointed superintendent of the airport.

At the present time there are two Jennies and a Standard on the field, beside Mr. Rickard's Waco. One of the Jennies is owned by Conrad C. Blom and the other by C. Lacey, of Hoosick Falls, N. Y. Both these men have soloed under "Vic" Rickard. "Skip" Wiesenski owns the Standard and has also received his instruction from Rickard.

Troy, N. Y.

By Milton S. Turk

A bond issue of $50,000 has been authorized and authority has been given the commissioner of public works to purchase the Van Valkenburg farm for an airport. William E. Arthur & Co., Inc., will have charge of construction and engineering.

The Van Valkenburg farm is located in the southern part of the city, ten minutes from the post office and a quarter mile from the bus and street car lines. The field contains 135 acres and there are no obstructions.

There will be three runways, approximately 2300, 3100, and 2700 ft. in length, and each will be 300 ft. wide. Plans call for the construction of two hangars, a station, an administrative building and the installation of sufficient lighting equipment to secure a Deparament of Commerce rating of "A".

Cluett, Peabody Company has painted "Troy" in 13 ft. yellow letters atop one of its buildings. This will be supplemented by an arrow pointing north.

An aviation club has been formed at the Rensselaer Polytechnic Institute, with an initial membership of 25. Plans are being formed for the purchase of some light plane for use of the members. The institute will offer a regular course in aeronautics, beginning next spring, and will be able to use some of the equipment received from the government.

St. Louis, Mo.

By H. A. Lindbergh

The original plan, that was submitted to the Municipal Plan and Scope Committee by its sub-committee on finance, has been reconsidered and deemed inadequate to serve the best interests of St. Louis.

The recommendation by Major Albert Bond Lambert, dean of aviation in the city, suggests that the original plan of acquiring additional acreage adjacent to the present Lambert-St. Louis Flying Field making a total of 446 acres, be increased to 608 acres.

Major Lambert estimated the total cost of the enlarged field together with improvements as being approximately $1,200,000 and urged that immediate action be taken in obtaining options on the additional area and that it be held subject to a bond issue to cover the entire project.

B. Russell Shaw, of the engineering firm of B. Russell Shaw & Co., was retained by the St. Louis Chamber of Commerce to determine what steps should be taken so the city would be adequately provided with necessary facilities for future requirements.

After a study of Mr. Shaw's report, the general committee decided to recommend the purchase of the present Lambert-St. Louis Field with the additional acreage and to continue efforts to establish a landing field, that would be close to the business district.

The increased area is nearly in line with the proposed outer belt system of boulevards, it could be converted into

a park nearly one half the size of Forest Park, it would make an ideal industrial district with factory and housing sites, switching facilities, railroad depot, well drained land and is located on two main highways.

The school children of St. Louis have presented a life size bust of Col. Charles A. Lindbergh to the Missouri Historical Society. It will be placed in the Jefferson Memorial.

Donations by the public school children were limited to ten cents apiece, permission having been given to the sponsors by the Board of Education of St. Louis and St. Louis County to make the bust a representative gift from the children.

As Colonel Lindbergh was extremely busy, Mr. Engleman, the European sculptor who completed the work, did not have the opportunity of studying the subject with the degree of care desired.

Due to this, Colonel Lindbergh was placed in a specially fitted room at the Coronado Hotel and 800 photographs were taken with a movie camera mounted on a circular track.

The subject was seated in the center of the room and shots were made from a number of angles as the camera was revolved around him. Studies were then made by Engleman from the photos that were projected on a screen in his studio.

Berlin, Wis.

By H. C. Brunner

Berlin is contemplating converting its present fair grounds into a landing field for airplanes, pending developments. Although the building of an airport in Berlin is not contemplated at this time, it is a project which will draw attention in the future.

Madison, Wis.

Another stop was recently added to the air mail route operated by the Northwest Airways between Chicago and the Twin Cities. The other cities that receive direct air mail service, besides the terminal points, are Milwaukee and La Crosse.

Over 3,000 pieces of mail to be sent on the first flight were received by Postmaster W. A. Devine previous to the opening.

An airport site was recently purchased by the city, which was selected by a representative of the Aeronautics Branch of the Department of Commerce. The area, which covers 291 acres, will be improved so as to be in first class shape, with such installations as beacon lights, hangars and other necessary improvements and equipment.

The air mail planes will eventually use this field, but the Penneo Airport will serve in the meantime, until the municipal field is ready to be used without delay or interference.

The Royal Airways Corporation, successors to the Madison Airways Corporation, operates the Penneo Airport, on which a hangar has been erected. This site is a 200 acre field, which is in good condition for landing and take off.

Two planes are in general use, a Travel Air cabin monoplane powered with a Wright Whirlwind (Miss Penneo No. 1) and an OX-5 Waco Nine (Miss Penneo No. 2).

The training school operated by the Royal Airways Corporation uses a Standard J-1 and a clipped wing Standard as instruction planes. About forty students are expecting to qualify as pilots under the guidance of Howard A. Morey, who has just been certified by the Aeronautics Branch of the Department of Commerce.

The Midwest Air Transport maintains the Madison Airport, a 92 acre field. They have the state agency for the Travel Air and own two other planes, an Air-King and a Jenny with high lift wings. Their training school for pilots includes thirty-two pupils.

Lieut. R. Barton Stevenson, formerly of the U. S. Navy

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and Lieut. Jerry Phillips, formerly of the U. S. Army, are the two pilots of this organization. Lieut. Phillips is out in Hollywood for a short time to pilot planes for the movies.

Cincinnati, Ohio

By C. C. Planck

With the closing of active flying at Lunken Airport, the Embry-Riddle Company's six pilots have a total of more than 3400 hours to their credit. Mileage flown by the company's planes so far this year totals about 350,000 miles.

Most of the flying has been in pleasure hops over Cincinnati and in the instruction of 93 students turned out by the Embry-Riddle Flying School since the first of the year. Other work includes air taxi service and aerial photography assignments.

Now that the Advance Aircraft Company's factory at Troy has been relieved of the rush of orders under which it labored all summer, the company will be able to get new planes for itself. Two new planes are to be added to the school instruction fleet of Waco 9's.

An air line carrying passengers and express across the Isthmus of Panama between the ends of the Panama Canal, is the plan of Edward C. Stroop, now a student in the Embry-Riddle Company's flying school at Lunken Airport. Stroop has spent 13 years in the Canal Zone and believes that such a line would receive much patronage. The train trip at present occupies between two and four hours, and is unpleasant, since the line passes through tropical forests for most of the journey. A regular schedule of 20 or 30 minutes flying could be maintained, he believes, using open cockpit planes and carrying passengers and express. Stroop has asked the Aeronautics Branch of the Department of Commerce to assist him in making his plans and obtaining permission from the military governor to operate the line. He will "solo" at the flying school in a short time.

Bartlesville, Okla.

A large privately owned airport, of modern construction, has been completed in this city by the Phillips Petroleum Company. The field is 4700 ft. north and south by 1800 ft. east and west. It is smooth and free from obstructions. There are two hangars on the field, although they are usually occupied and offer no accommodations to visiting planes.

Both high and low test gasoline and motor oils are available at all times. The field is not lighted for night flying at present.

The airport is one and a half miles directly west of the central part of the city. The name "Bartlesville" is being painted on one of the larger buildings in the middle of the city, with an arrow pointing toward the field.

Boston, Mass.

By Daniel Rochford

On Dec. 1 the Massachusetts Interim Commission to determine the proper policy for the state to pursue regarding aviation made its formal report to the governor and legislature. Its chief recommendations were that the state should leave airports and their financing to the towns and cities and should change the State laws to permit municipalities to buy land and own airports both in and outside their corporate boundaries.

The proposal for an independent aviation department in the State government was reported upon adversely and it was recommended that further control powers be given the Department of Public Works, registrar of motor vehicles. He would have the power to suspend a pilot's right to operate aircraft in Massachusetts, even though a man operated under a federal license. He would continue to license and register pilots and aircraft used within the state though the law

already provides a properly issued federal license obviates the necessity for a state license.

At present aircraft inspections are carried on by Robert L. O'Brien, a reserve Army flier who works as regular automobile driving examiner and inspector for the registry of motor vehicles and handles all aircraft matters. He has no state airplane and has used service planes or rented commercial planes for state business. No plan for a state-owned airplane was reported out.

Of particular importance to Boston is the recommendation that the Boston Airport be leased to the city for twenty years at a nominal rental of one dollar a year for ten years and thereafter a share of the gross revenue and that Boston spend $50,000 a year for ten years fixing the airport up to class A shape.

A petition of 441 Boston business men was presented Mayor Malcolm E. Nichols of Boston urging that the city take over the airport under some such arrangement. But he passed the proposal off without committing himself.

A down-town preparatory flying course opens Monday evening, Dec. 12, in Boston. Air Service of New England, Inc., is teaching the course and leading local pilots and technical aviation men are serving as instructors.

The U. S. Army air force at the Boston Airport has had everything but flying to do since the floods in Vermont. They had but two planes, a Vought and a PT-1. The PT was wrecked at Montpelier and so the reserves have had no flying at all for a fortnight and the regular Army personnel have put most of their time in completing the additions to the operations office at the airport.

Harvard Flying Club Elects

The Harvard Flying Club has elected fourteen new members. They were guests of the club at a dinner at the Harvard Club of Boston the night of Dec. 5. The new birdmen are: W. C. Atwater, '28; C. D. Breckenridge, '31; T. W. Dunn, '31; R. R. Forester, '30; A. T. Hartwell, '29; C. E. Henderson, '28; Sargent Kennedy, '28; D. M. Leith, '29; M. McKay, '31; J. L. Pool, '28; I. T. Williams, '31; J. R. Wood, '28. These men were chosen after a six weeks competition. They worked afternoons at the airport, washing the plane, keeping logs, servicing, etc. A second competition will be held the first of next year. Membership in the club carries with it the privilege of buying the use of the club Travel Air plane at a moderate hourly fee.

Colonial Air Transport has put Pitcairn special mail planes on the run with a speeding up in time between Hadley Field and Boston. The cabin planes are to shift to the Albany-Cleveland route of Colonial Western Airways.

Station WBET of Boston broadcasted a simulated air battle recently between leading aces of Germany and the United States. Various electrical and orchestral devices were used to give the sound of planes diving and roaring and the spitting of machine guns.

Reserve commissions in the Naval flying forces have been issued to Fred S. Ralph of Tufts College, Henry Sartoris, of Winchester, Walter C. Hughen of Cambridge, and Freeman Cutter of Milton.

The opening of the moving picture "Up in the Air" featuring Wallace Beery in Boston theatres was marked by "Aviators Night" Monday, Dec. 5, when all local flying men were invited to attend as guests of one of the theatres.

A new student flying club has been formed in Boston at Northeastern University. Fifteen men joined and the club plans a series of talks this winter and hopes to acquire a plane next year. The Tech Flying Club is working towards the funds to buy its own plane. The M.I.T. Aeronautical Engineering Society is sponsoring the flying club but the two organizations are separate.

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The War Department has announced the conditions under which military aeronautical equipment may be obtained for exhibition purposes. The exhibit must be of educational value to a considerable number of the public, and not directly or indirectly benefit any private individual or corporation. The recommendation of the Aeronautical Chamber of Commerce of America will be obtained in each case. The exhibitor must pay in advance the estimated cost of packing and shipping the exhibit both ways, savings thereon to be returned to the exhibitor. The exhibitor must furnish in advance a surety bond equal to the value of the Air Corps exhibit as fixed by the Chief of Air Corps to cover both loss and damage to the property. Existing legislation requires that such exhibits cannot be allowed to pass out of the control of the War Department, so a detachment of enlisted men must always accompany the property.

To Investigate Airdrome Lighting

A board of officers has recently been convened at the Materiel Division of the Army Air Corps at Wright Field, Dayton, Ohio, to study the degree of illumination required for the efficient operation of airdromes at night. Based on ten years' experience in night flying, numerous types of devices for lighting airdromes have been manufactured and installed. These various modern types of lighting units have been concentrated at the Air Corps experimental station for the use of the board in this study. Particular attention will be given varying weather conditions and other factors affecting the landing of aircraft. Representatives of 25 manufacturers of lighting equipment have been sent to Wright Field and will aid the board in its effort to determine the most desirable means of aiding night flying of aircraft.

Wright Field, Ohio

The Army Air Corps has finished the installation of the visual inspection system at Wright Field, Dayton, Ohio. All of the other eighteen Army flying fields in the United States have previously been similarly equipped.

Army Air Orders

First Lieut. Charles S. Ward, Corps of Eng., is detailed in the Air Corps. He is relieved from assignment to the 8th Eng., Fort Bliss, Tex., and will proceed to Brooks Field, and report to commandant Air Corps Prim. Fly. Sch.

Upon the completion of tour of foreign service, the following first lieutenants, of the Air Corps, will join stations indicated: Frederick W. Evans, Mitchel Field; Kenneth C. McGregor, Middletown Air Depot; Louis M. Merrick, Bolling Field.

Maj. Clarence L. Tinker, Air Corps, Washington, to Kelly Field.

Maj. Clarence L. Tinker, Air Corps, is designated as assistant commandant of the Air Corps Adv. Fly. Sch., Kelly Field.

Capt. Hugh M. Elmendorf, Air Corps, Selfridge Field, to Kelly Field.

First Lieut. Frank B. Tyndall, Air Corps, is relieved from present duty at the Keystone Aircraft Factory, Bristol, Pa., and will proceed to Langley Field.

Navy Air Orders

Lieut. James R. Allen det. Nav. Aircf. Fact. Navy Yard, Philadelphia, to Nav. Air Sta., Pensacola.

Lieut. Comdr. Thalbert N. Alford det. Nav. Air Sta., Pensacola, to temp. duty Nav. Air Sta., Nav. Oper. Base, Hampton Roads.

Lieut. Comdr. John H. Campman det. command Nav. Air Sta., Sand Point, Seattle, to command VT Squad. 4B, Aircf. Squad., Battle Fleet.

Lieut. Comdr. Harry P. Curley det. 7th Nav. Dist., Key West, to Nav. Air Sta., Pensacola.

Lieut. John D. Alvis det. VO Squad. 1 (USS Arizona), Aircf. Squad., Battle Fleet, to USS Texas.

Lieut. Harry A. Brandenburger det. VO Squad. 2B (USS Idaho), Aircf. Squad., Battle Fleet, to VO Squad. 2B (USS New Mexico), Aircf. Squad., Battle Fleet.

Lieut. Earl B. Brix det. VO Squad. 2B (USS Mississippi), Aircf. Squad., Battle Fleet, to VO Squad. 1B (USS California), Aircf. Squad., Battle Fleet.

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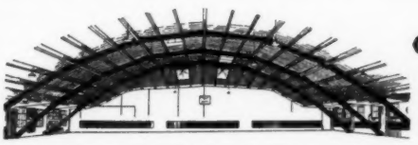

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PUBLISHER'S NEWS LETTER

The Fourth International Congress of Aerial Navigation held in Rome during the latter part of October provided an incentive to forty-one countries to send delegates to discuss the progress and the problems of air transport which is extending with such rapidity to even the most remote countries of the World. And it may be noted that the representatives of these countries were not merely fortunate persons who were afforded a delightful visit to the Eternal City, with its warm hospitality, but in almost all cases were experts in various aeronautical fields who came with a serious purpose to serve. Builders of commercial aircraft, operators of air lines, famous pilots, engine builders, meteorologists, aeronautical engineers, specialists on aerial law, and many others interested in aviation in some particular branch came, at the invitation of Premier Mussolini to exchange opinions and make acquaintances. Probably there has never before been assembled such a composite group of aeronautical enthusiasts. Including the Guests of Honor and Members, seven hundred and fifty persons came to make this Congress the most important ever held.

* * *

Many persons have asked about the direct purpose of the Congress, its power, its decisions and its authority.

As these congresses are to be held every two years—1929, in Holland—it may be well to clear up some of these points as the importance of these gatherings will increase greatly with the expansion of air transportation. Physicians, lawyers, scientists and many other professions hold Congresses or conventions in various parts of the world where leaders in their particular field come and give the results of their researches, disclose new discoveries and give to the world reports on the progress of their art or profession. Discussion by well informed experts opens new fields for study and endeavor. Such meetings have no power to make decisions. Authority comes from the distinguished character of those in attendance and as for the purpose; it is for the broader dissemination of specialized knowledge. The Congress at Rome was divided into five groups, Aerial Navigation, Touring and Propaganda, Aerology, Technical, Legal and Medical. For a week, specialists in all these fields read carefully prepared papers giving the latest results of observation and study. While many languages were used in the original presentation, French, the official language, made the papers available to all in a most usable form. When printed and made available for study, the hundred and fifty reports will give a broad view of aeronautical progress not to be found elsewhere in print. For these reasons, such Congresses should be encouraged. They bring together aviation people to discuss commercial air transport. This could never be done if the military side of the art were to continue to predominate.

* * *

The host in Rome was the Air Ministry. With the active support of Premier Mussolini who, of course, being a pilot, is the leading flying statesman in the world, the Under Secretary of State for Aeronautics, Italo Balbo provided the most elaborate entertainment for the guests and every facility was provided for the convenience and comfort of the delegates. Signor Balbo was one of Mussolini's chief aides at the time of the historic March on Rome and although still in his thirties is one of the most important figures in contemporary Italian life. He presided at the Congress and by most careful staff work provided entertainment and instructive sight seeing trips for his large group of guests. Premier Mussolini opened the Congress with a speech that was not only gracious in its welcome but extremely optimistic in its forward looking vision. As this meeting was held in the famous Palace of the Senators on Capitoline Hill, with many of the official delegates and Italian officers wearing uniforms with countless decorations, the occasion was one of great brilliancy.

* * *

Americans who attended the arrival of the Pan American Good Will Flyers in Washington saw the distinguished delegates from South and Central America herded behind ropes where they had to stand on chairs to see over the heads of earlier arrivals. Such an occurrence is unthinkable anywhere in Europe and those who have the opportunity of seeing the way aeronautical guests are entertained and feted in Europe should do all in their power to impress our government officials with the importance of handling international affairs with dignity and forethought. Probably nowhere else in the world could settings be provided for such a meeting as were available in Rome. Not only were palaces of great beauty and historical importance used for entertainment and meetings but the opportunity for sight seeing was unmatched. After the Congress, the delegates were taken to Naples, Milan, Turin and Venice where they were shown aeronautical developments of interest, as well as entertainment with the same cordiality as in Rome. And what will be particularly interesting is that all delegates were given visas for their passports without the usual fee, half rates on the Italian railways and half rates at the hotels. Now that the United States is taking front rank in commercial and government aeronautics an international convention should be held here which would attract visitors from all parts of the world. And when they come they should be shown the many courtesies that were so in evidence in Rome.

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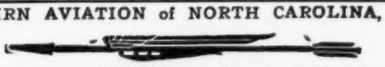

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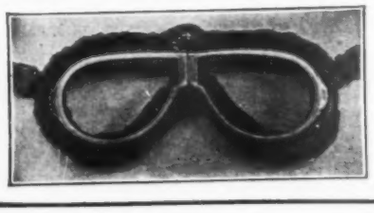

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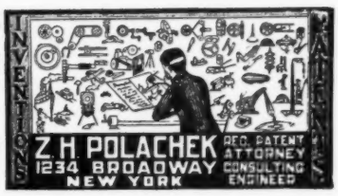

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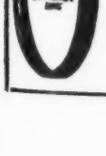

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Jackson, Mich., U. S. A.

A Good Product Effectively Advertised in the Best Magazine . . .

Result . . . 500 replies from one insertion in a period of two weeks . . .

This advertisement in page size appeared in the November 7th issue of AVIATION.

An unsolicited letter from the advertising agency telling of the results.

Advertising
ROONEY-SODERLUND-ROONEY
NATIONAL BUILDING
MINNEAPOLIS, U.S.A.

November 21, 1927.

My dear Mr. Newbold:

It occured to me that you might be interested to know that the advertisement we placed in the November 7th issue of your magazine for The Mohawk Aircraft Corporation has brought in over 500 inquiries to date, among which were 50 inquiries asking for details as to dealer propositions.

A remarkable feature is the fact that the inquiries are of a uniformly high calibre, the majority of them from business firms.

We feel that much of the success of the Mohawk Advertisement is due to your splendid co-operation in set-up, and in giving the advertisement such excellent position. We want you to know that we appreciate it

Although they have as yet no definite schedule, you may rest assured that Aviation will be used again.

Yours very truly,
ROONEY-SODERLUND-ROONEY
By A. T. Ofstie

Mr. Geo. Newbold
Aviation
Broadway at 57th St.,
New York City.

A new sport plane..
the MOHAWK PINTO!
advanced type - new beauty
greater value
IN the design of the Mohawk Pinto has been embodied those features of aircraft construction for which the public has been waiting. . . A small sport plane especially made for the private owner . . . advanced design making The Pinto easy to fly . . . and yet, from nose to tail-skid, constant adherance to the highest level of excellence in structure, beauty and simplicity.
Steel tubing fuselage, split type landing gear, hydraulic shock absorbers, air-cooled motor, easily detachable wings and other advanced features combine to place this ship distinctly in a class by itself.
Write for full information and literature.
MOHAWK
AIRCRAFT CORPORATION
Minneapolis Minnesota

AVIATION advertising consistently brings the best results because its readers and the market for aircraft and other aviation products are identical. Let us tell you why.

AVIATION

The Oldest American Aeronautical Magazine

One of 4000 airports in America

One of the busy factories

The Sun Rises *offering a great, new* Opportunity

Lieut. Walter Hinton, First Trans-Atlantic Pilot of N. C. 4 fame. President of Aviation Institute.

MAKE big money in Aviation. Thousands of opportunities are opening every day. It's the business of the hour—the gold mine of the future. Just as in the automobile field when it was new, men who learned the fundamentals climbed to the top—just as in electricity, radio—so it will be in Aviation.

This great, new field is open to every ambitious young man and woman. There are 53 different trades in the industry, many ground jobs. The business is humming. Manufacturing of machines and parts is growing by leaps and bounds. There are now 4,000 airports operating in America — 6,000 privately owned planes. There's big money in this life of thrills, adventure, admiration. Read our Free Book, "Rich Rewards in Aviation."

Wide awake men are needed as mail pilots, commercial flyers, instructors, inspectors, riggers, mechanics at flying fields, besides the thousands of positions in factories.

At home in your spare time, you can learn the fundamentals of Aviation. Lieut. Walter Hinton, first Trans-Atlantic flyer, and his staff of experts will guide your instruction from beginning to end. No previous experience or training necessary.

The Aviation Institute Course teaches you everything you need to know, right up to the point of actual flight instruction in the air. All the principal ground work, so absolutely necessary to qualify, is secured in a comparatively short time at home, without interfering with your present employment.

When you have graduated from the Institute you are ready to take your place in Aviation.

If you wish to become a pilot, final flying instructions are given at low rates, at Hoover flying field in Washington or at other fields in all parts of the United States in cooperation with the Institute. Five to ten hours with an instructor and you can fly alone. *One flight to each graduate without charge.*

FREE

Get all the facts about the Institute course and the way it leads to Opportunity. Send the coupon today.

This Book Tells All

AVIATION INSTITUTE OF U.S.A.

Walter Hinton, President

1115 Connecticut Ave., N. W. Suite 712 Washington, D. C.

Aviation Institute of U. S. A., Suite 712
1115 Connecticut Ave., N. W., Washington, D. C.

You may send me without obligation a Free copy of "Rich Rewards in Aviation"

Name .....

Age .....

Street .....

City ..... State .....

Stinson-Detroiter Cabin Plane with Wright Whirlwind engine, used by the Northwest Airways, Inc., over their Air Mail Route No. 9, like others in the service of this air mail contractor, is equipped with Eclipse Hand Inertia Starter, Series VI.

SAFE STARTING!

Injury to the operator cannot possibly occur when Eclipse Aviation Engine Starters are used. The necessity for directly pulling the propellor "through" by hand is completely eliminated. Aside from the safety thus provided, Eclipse Starters also insure dependable, quick starting in coldest weather, with minimum effort. The majority of planes in commercial service, equipped with modern engines, have Eclipse Starters installed. Write for full information stating engine in which you are interested.

ECLIPSE MACHINE COMPANY
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